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# Handbook of organizational measurement

Introduction

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## 1. Introduction

### Statement of purpose

The handbook has four objectives. The first is to promote standardization of the measures used in the study of work organizations. Different researchers studying turnover, for example, should use the same measure. The use of uniform measures by different researchers facilitates comparison of results and makes it easier to build theory. It is, of course, possible to build theoretical models without standardized measures, and to some extent the estimation of models with different measures serves a useful purpose. If valid, for instance, models should be able to withstand testing with different measures. Model-building, however, generally proceeds most rapidly with standardized measures.

The second objective is to promote standardization of labels for concepts used in the study of work organizations. The building of theoretical models is again facilitated if, for instance, all researchers who are studying the movement of individuals across the membership boundaries of organizations refer to this phenomenon as "turnover". Researchers may overlook key data pertaining to this movement because, rather than being labelled "turnover", the data are referred to under such diverse labels as attrition, exits, quits, separations, mobility, and dropouts. Experienced researchers often develop the ability to locate similar conceptual material under various labels. Model-building is made easier, however, if uniform labels are used for the same ideas. The standardization of labels is especially needed in the study of organizations, because so many disciplines and applied areas are interested in the subject. Conceptual discussions in the handbook are often accompanied by a listing of synonyms, as was just done for turnover. The purpose of these synonyms is to alert the researcher to the possibility that the concept he/she is investigating is discussed elsewhere with different labels. These listings should increase research continuity.

The third objective is to improve measurement in the study of work organizations. Compilation of this handbook has revealed deficiencies that require correction. Some widely used organizational concepts, such as ideology, have no acceptable measures. The handbook will regularly make suggestions regarding correction of these deficiencies.

The fourth and final objective of the handbook is to make it easier to teach introductory courses on work organizations. The author has taught such courses for almost four decades, and he has found that students in these courses have great difficulty with the multiplicity of terms used in organizational study. This difficulty is aggravated if the professor has students from different disciplines and applied areas, and if the professor attempts to present material from these fields. After the 1972 edition of this handbook was issued, the author used it in his introductory courses, and it seemed to help the students successfully manage the conceptual confusion that exists in the study of organizations. Other professors with whom the author has talked have had the same experience. The author thus wishes to emphasize the potential value of the handbook as an aid in teaching.

As has been indicated, the handbook focuses only on work organizations – social systems in which the members work for money. The members are, in short, employees. Excluded by this focus are churches, trade unions, professional associations, trade associations, and fraternal orders – social systems commonly referred to as “voluntary associations”. Also excluded are communities, societies, families, crowds, and gangs. This focus on work organizations makes the task of the handbook more manageable. Other scholars will have to compile measurement handbooks for these other social systems.

The handbook is intended for professors and students in the area of work organizations. Although diverse disciplines and applied areas will be represented by these professors and students, the most important disciplines will be economics, psychology, and sociology, and the most important applied areas will be business, education, public administration, and health. Courses in work organizations will be referred to in many ways, but most of the courses will use, in some manner, one of three labels: organization, administration, and management. It is not likely that the handbook will be used below the college and university level. Though the handbook is not intended for managers and the general public, managers who were educated in colleges and universities should be able to understand most of the material quite well.

### **Measurement**

Measurement is the assignment of numbers to observations (Cohen, 1989, p. 166). Typically, four levels of measurement are distinguished: nominal, ordinal, interval, and ratio (Stevens 1951)[1]. Nominal measurement is classification, such as the subdivision of organizational work by function, product, and geographical area. There is no assignment of numbers in nominal “measurement”. Ordinal measurement consists of ranking, such as by social class. One social class can only be viewed as higher or lower than another; the amount of distance between the classes cannot be meaningfully determined. Ranking is involved in interval measurement, but it is also possible to make meaningful calculations regarding the intervals. Sixty degrees of angle is, for instance, twice as wide as 30 degrees. Ratio measurement has all the properties

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of interval measurement, but, in addition, has a true zero. Weight is an example of ratio measurement. Measures are evaluated for their validity and reliability (Carmines and Zeller, 1979). Consider first validity.

Validity is the degree to which a measure captures the concept it is designed to measure. It is generally believed that validity should be sought prior to establishing reliability, since having a reliable measure that does not capture the concept will not aid in building theory. Six types of validity are distinguished.

- (1) Criterion-related validity is the degree of correspondence between the measure and some other accepted measure, the criterion. One form of this is called concurrent validity, where the criterion and the measure are assessed at the same point in time. Another form is predictive validity, where the measure is expected to be highly related to some future event or behaviour, the criterion. Criterion-related validity is not often assessed in organizational research.
- (2) Content validity is the extent to which a measure reflects a specific domain of content adequately. This type of validity is generally discussed in terms of whether the items used in the measure represent a reasonable sampling of the total items that make up the domain of content for the concept. As with criterion-related validity, this type is not used often.
- (3) Construct validity is the extent to which the empirical relationships based on using the measure are consistent with theory. This is probably the most often cited form of validity assessment. Actually assessing construct validity involves specifying of the theoretical relationship, obtaining the empirical relationship, and then comparing the two. Empirical verification of the hypothesized relationship is offered as support for the construct validity of the measure.
- (4-5) Convergent and discriminant validity are terms that emerged in the literature primarily as a result of the work on the multitrait-multimethod matrices by Campbell and Fiske (1959). Although the technique recommended by these authors is not often used today, the two validity concepts have remained. In general terms, convergent validity exists if different measures of the same concept are highly correlated, whereas discriminant validity exists if different concepts measured by the same method are lowly correlated. In practice today, these concepts are often applied to the results of factor analysis, where multiple-item measures are said to have both convergent and discriminant validity if the items designed to measure a concept load together and other items designed to measure other concepts do not load on this factor.
- (6) The face validity criterion is usually applied *post hoc* when the researcher is using secondary data and argues that particular measures, because of the content and intent of the questions, appear to

measure the concept of interest. Face validity is not usually recommended, because of the lack of criteria for deciding what is and what is not valid.

Reliability is the extent to which a measure produces the same results when used repeatedly. "Consistency" is often used as a synonym for reliability. Cronbach's alpha (1951) is the most common way to assess reliability in organizational research. A scale must have two or more items to calculate an alpha coefficient. Alpha coefficients range from zero to one, with the highest value indicating the greatest reliability. Although recommendations vary, 0.70 is often viewed as the minimum acceptable level for alpha. "Alpha" in the handbook always refers to Chronbach's alpha. When single-item measures are used, test-retest coefficients are often computed. This computation involves correlating the same measure for the same case at two or more points in time.

"Objective" and "subjective" measures are commonly distinguished in organizational research. Records and observations provide objective data, whereas interviews and questionnaires are viewed as providing subjective data.

The handbook is uncomfortable with the objective/subjective distinction. In the final analysis, all data are subjective. Records, for example, must be interpreted and observations are ultimately expressed in language which is based on consensus. In short, an objective measure is, as the saying goes, a subjective measure once removed (Campbell, 1977).

The handbook is also uncomfortable with the claim that objective measures are inherently more valid and reliable than subjective measures. Van de Ven and Ferry view this claim as "...patent nonsense" (1980, p.60). Absenteeism data obtained from records must, for example, be as carefully evaluated for validity and reliability as absenteeism data collected by self-reports from employees.

The handbook will retain the objective/subjective distinction because of its widespread use in the literature. However, the previous restrictions should be kept in mind when the distinction is used.

### **Selection criteria for measures**

Four criteria guided the selection of the measures for this handbook. The first criterion is quality. Where there is a set of measures available for a concept, the handbook gives preference to the measure(s) whose validity and reliability are the highest. Historically important measures are not included if other measures appear to be more valid and reliable. Similarly, widely cited and currently used measures are excluded if alternatives are available with higher validity and reliability. Quality is, of course, a relative matter and will vary among the concepts examined. The measures for some concepts will exhibit impressive validity and reliability, whereas the measures for other concepts will be less impressive.

The second criterion is diversity. If several equally valid and reliable measures of a concept are available, and if two different types of measures are included among these measures, the handbook gives preference to the inclusion

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of different measures, such as one from each type. Since space in the handbook is limited, application of this criterion will sometimes result in the exclusion of some impressive measures. This is unfortunate, but there is not space to include all worthy measures. Diverse measures are preferred because they facilitate the assessment of theoretical propositions. Two different measures of a concept that produce similar results provide more convincing evidence for a theory than do similar results obtained by two measures of the same type.

Simplicity is the third criterion, and relatively simple measures are preferred. If two questionnaire measures have approximately the same validity and reliability, and if one measure is much more complicated than the other, the handbook favours the simpler measure. The rationale is that researchers are more likely to use simpler measures, and widespread use will produce more comparable data, thereby facilitating the development of theoretical models.

The fourth criterion is availability; the best measures are those which appear in books or journals regularly included in university and college libraries. Other things being equal, the handbook is biased against measures that circulate informally among researchers, appear in “working papers”, are part of dissertations, or are included in “proceedings” issued by various types of professional associations. The handbook’s belief is that measures that are easily available will be used more widely and will produce more comparable data, and again make it easier to build theoretical models. Easily available measures, especially those which appear in books and journals, have also typically been subjected to peer review, thereby increasing the likelihood that they are valid and reliable.

Two final comments about these criteria are necessary. First, application of the criteria was guided by the purposes for publishing the handbook, as set forth earlier in this chapter. If the purposes for writing the handbook are furthered, it will include measures whose psychometric properties are not satisfactory, that present two similar measures for the same concept, that are complicated, and that are difficult to obtain. In short, the handbook uses the criteria as guides and not as rigid rules. Second, application of the criteria has resulted in the exclusion of many measures, and the handbook makes no attempt to justify such exclusions. The handbook has examined dozens of measures which are not included, and to attempt to justify each of these exclusions would have significantly lengthened the handbook. The handbook believes it has examined all major measures, but time and the comments of colleagues will serve to reveal the handbook’s comprehensiveness.

### **Frame of reference**

The frame of reference is the set of concepts used to organize the handbook. This includes 28 concepts, extending alphabetically from “absenteeism” to “turnover”. The handbook uses concepts as equivalent to ideas. Each concept, of course, has a label or term to identify it, such as “absenteeism” and “turnover”.

The handbook has sought to select the concepts and labels used most widely by scholars who study work organizations. There is a surprising amount of agreement about the important concepts in the study of organizations, which is a pleasant surprise given the number of disciplines and applied areas interested in this type of study. The most serious problem arises with the labels. The same concept is labelled many ways and the same label has many meanings. This terminological confusion is to be expected with the number of different types of scholars involved. There is, however, a fair amount of agreement on the labels, and the handbook emphasizes these points of agreement. Emphasizing the areas of agreement is a way to further standardization of concepts and labels.

The handbook is not rigid about adhering to these areas of agreement, however. If the handbook believes organizational scholars are neglecting an important concept, the concept is included in the handbook. Examples of such concepts are departmentalization, general training, and productivity. The handbook also sometimes departs from widely used labels if it believes these departures contribute to the building of theoretical models. Evaluative labels, such as "bureaucracy", are also consistently avoided. The handbook prefers the more neutral label of "administrative staff". Each deviation from an area of agreement is justified.

Based on experience with the 1972 and 1986 versions of the handbook, eight comments are offered about the frame of reference.

First, the frame of reference is sensitive to the phenomenon of change. One of the concepts, innovation, is used directly in studies of change. "Process" is often used as an example of a change concept. If process means intervening variables in causal models, then several of the concepts, such as commitment and satisfaction, are often used in this manner. If, on the other hand, process refers to movement, then turnover is an illustration of this use of process. So-called static concepts, such as pay stratification, can also be studied longitudinally rather than cross-sectionally, thereby examining change. In sum, the study of organizational change is an important topic, and the handbook reflects this importance.

Second, each concept in the frame of reference refers to a single idea. Mass production, for instance, is not included as a concept because it includes three quite different ideas: complexity (differentiation), mechanization, and technical complexity (continuous process). These single ideas can, of course, have dimensions or subsets of less general ideas. Satisfaction, for example, is a single idea which is commonly dimensionalized into satisfaction with pay, work, co-workers, promotional opportunity, and supervision. Sometimes, however, what are termed "dimensions" of a concept are not appropriate dimensions but rather different concepts. An example of inappropriate dimensions is Seeman's (1959) concept of alienation. Five "dimensions" are commonly indicated in the literature: powerlessness, meaninglessness, normlessness, isolation, and self-estrangement. Since the literature does not provide a general concept that includes these five "dimensions", what Seeman provides is five different definitions of alienation. The rationale for single-idea concepts is that disproof

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is easier in theoretical models with this characteristic. Model estimation is very complicated if the concepts that constitute it have multiple meanings.

Third, the frame of reference uses different units of analysis. The core of the handbook examines the classic structural variables of major concern to organizational scholars. Examples of such variables are centralization and formalization. However, a sizeable component of the handbook also examines variables which especially interest organizational scholars who are social psychologically oriented. Examples of such variables are commitment, involvement, and satisfaction. Another part of the handbook examines variables, such as competition, of concern to organizational scholars who focus on the environment. Finally, the handbook includes concepts of interest to demographically-inclined organizational scholars. Size is an example of this type of concept. The geographical component of complexity in the discussion of technology is also of interest to demographers. What unites these different units of analysis is that all of them reflect the concerns of organizational scholars. "Organizational measurement" to the handbook thus means measures used by scholars who study work organizations. All of the measures do not use the organization as the unit of analysis.

Fourth, with only three exceptions, all of the concepts in the frame of reference refer to variables, that is, there can be different amounts of the concepts. The exceptions refer to classes of data to which numbers are not assigned: environment, power, and technology. Variables, however, are included within the domains of the environment, power, and technology. The previous reference, at the start of this section, to 38 concepts in the frame of reference referred to variables.

Fifth, nearly all of the concepts are behaviourally defined. Distributive justice, for example, is the degree to which rewards and punishments are related to performance inputs (see Chapter 17). The *perception* of distributive justice is an important research topic, but the concept is defined in *behavioural* terms. Most organizational scholars define their concepts in behavioural terms – thus the main thrust of the handbook. However, some concepts – examples are commitment, involvement, and satisfaction – are not behaviourally defined. Organizational scholars who define their concepts behaviourally, however, nearly always use non-behavioural measures of their concepts. Distributive justice – to return to the previous illustration – is typically measured with data collected by questionnaires and/or interviews.

Sixth and seventh, the frame of reference is intended to be exhaustive and mutually exclusive. An attempt has been made to include all major concepts of interest to organizational scholars. No attempt is made, however, to make the frame of reference all-inclusive. Space limitations do not permit the inclusion of all concepts of interest to organizational scholars. The frame of reference is also intended to be mutually exclusive. None of the concepts in the handbook should overlap. The same term may be partly used for different concepts – examples are complexity and technical complexity in the chapter on technology – but the ideas are intended to be different.

Eighth, the frame of reference does not include demographic variables, such as age, seniority, education, race, and occupation. These variables are often included in theoretical models and used as measures by organizational scholars. The handbook is of the opinion that these variables should not be included in theoretical models and constitute inferior measures (Price, 1995). As a rule, the handbook seeks areas of agreement among organizational scholars. If a concept is widely used, it is included. Or again, if a label for a concept is widely used, the label is adopted by the handbook. Although there is some support for the handbook's view of demographic variables, what is argued is mostly deviant from the mainstream.

### **Outline of this handbook**

The 28 substantive chapters of this handbook are arranged alphabetically, starting with "absenteeism" and ending with "turnover", since the handbook is a reference source more like a dictionary than a textbook or a report of a research project. The 1972 and 1986 editions of the handbook were arranged alphabetically, and this appeared to work well for the users.

Of the 28 substantive chapters, 24 examine a single concept. Four chapters examine multiple concepts: environment (three concepts), positive/negative affectivity (two concepts), power (three concepts), and technology (six concepts). Consider the single-concept chapters. Each chapter has three parts. There is first a definition of the concept that is the focus of the chapter. Since there is so much terminological confusion in the study of organizations, the conceptual discussions are often fairly extensive. The second part of the typical chapter consists of a general measurement discussion of the chapter's concept. This measurement discussion mostly provides background material for the measurement selection of the chapter. The third part of the chapter presents one or more empirical selections illustrating the measurement of the concept. Illustrative material in these selections is intended to provide sufficient information to replicate the research described. When a chapter has multiple concepts – as with environment, power, and technology – each concept is treated as in the single-concept chapters, that is, there is a definition of the concept, a discussion of the concept's measurement, and presentation of one or more empirical selections illustrating the concept's measurement. The chapter on positive and negative affectivity is likewise treated as a single concept chapter.

The measurement selections are described in a standardized manner. Each selection covers the following topics: description, definition, data collection, computation, validity, reliability, comments, and source. The comments constitute the handbook's opinion of the measurement selection. The sequence of the comments follows the order in which the selection is described. First there are comments about the description, then the data collection, and so forth. In addition to the measurement selections, some chapters contain measurement suggestions for future research. A chapter may contain only measurement



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suggestions, since an appropriate empirical selection could not be found – an example is the chapter on ideology.

The handbook also has an introduction and conclusion. As is apparent by now, the introduction indicates the purpose of the handbook, sets forth a view of measurement, discusses the frame of reference used to organize the handbook's substantive chapters, describes the selection criteria used to select the measurement illustrations, and indicates the handbook's outline. The concluding chapter offer the handbook's reflections on organizational measurement during the last 30 years, makes a recommendation for future measurement research, and offers an administrative suggestion that might facilitate measurement research.

**Note**

1. Duncan (1984, pp. 119-156) provides a critique of Stevens' (1951) work.

## 2. Absenteeism

### Definition

Absenteeism is non-attendance when an employee is scheduled to work (Atkin and Goodman, 1984; Van der Merwe and Miller, 1976, pp. 8-9). The typical absence occurs when an employee telephones the supervisor and indicates that he/she will not be coming to work as scheduled. It is the scheduling that is critical. Vacations and holidays, because they are arranged in advance, are not considered absenteeism. Fortunately, the Bureau of Labour Statistics, which collects an immense amount of data about absenteeism, uses a similar definition of absenteeism (Hedges, 1973; Miner, 1977). This similarity makes the data collected by the Bureau available for scholarly analysis. The definition refers to "employee" because, as indicated in the introductory chapter, work organizations are the focus of the handbook.

Voluntary and involuntary absenteeism are often distinguished (Steers and Rhodes, 1978), with the exercise of choice serving as the basis for this distinction. An employee choosing to take a day off from scheduled work to transact personal business is an illustration of a voluntary absence. Because no elements of choice are involved, non-attendance due to accidents and sickness are considered instances of involuntary absenteeism. Voluntary absenteeism is usually for a short term – for one or two days typically – whereas involuntary absenteeism is mostly longer-term, generally in excess of two consecutive days. It is difficult operationally to distinguish between these two types of absenteeism – so difficult that some scholars (Jones, 1971, p. 44) despair of the distinction – but the handbook believes the distinction is useful and should be retained[1]. Since scholars generally prefer to study events that occur more often, voluntary absenteeism has been the most researched type (Chadwick-Jones *et al.*, 1982, p. 118).

The term "withdrawal" occurs frequently in discussions of absenteeism (Porter and Steers, 1973), where it is noted that non-attendance at scheduled work is a form of withdrawal from the organization. Lateness and turnover[2] are also forms of withdrawal, and employees who are low on involvement, because their focus is not strongly centred on work, can also be viewed as an illustration of withdrawal[3]. The concept of withdrawal, at least in its present form, seems to have its source in the Tavistock Institute of Human Relations in London, UK[4]. A problem with withdrawal is that it is not precisely defined in such a way that it conceptually encompasses absenteeism, lateness, turnover, and involvement (Price, 1977, p. 8). Without this conceptual precision, questions of validity are not easily resolved.

### Measurement

The measurement of absenteeism has a long tradition in behavioural science. In the USA, researchers at Harvard (in the School of Business Administration) were concerned with the topic in the 1940s, and there has been a steady stream

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of publications from the Survey Research Center (University of Michigan) since the early 1950s. As noted above, the Tavistock Institute in the UK has been an important source of contemporary research on withdrawal. Other major scholars in the UK (Behrend, 1953; Chadwick-Jones *et al.*, 1982; Ingham, 1970), who are not part of Tavistock, have also addressed measurement issues about absenteeism.

Chadwick-Jones *et al.* (1982), the first measurement selection, use three major measures of absenteeism: time lost, frequency, and number of short-term absences. There is wide support in the literature for the use of these measures, as well as for the researchers' conclusion that voluntary absenteeism is best measured by frequency and short-term absences[5].

Two measurement issues not treated by Chadwick-Jones *et al.* require brief discussion. First, there is the question of the distinction between absenteeism and lateness. The consensus seems to be to treat more than four-and-a-half hours away from work as a day absent; any time less than this is viewed as lateness (Isamberti-Jamati, 1962). This distinction is, of course, arbitrary, but some standardization is necessary to promote comparability among measures; it becomes a major practical concern when collecting data. Second, there is some question as to the applicability of ordinary-least-squares regression analysis to absenteeism data. Hammer and Landau (1981) argue that the generally truncated and skewed nature of the absenteeism data (a substantial number of zero values, more values with a score of one than zero, then a gradual decline in the frequency of larger values) may result in incorrect model estimation with ordinary-least-squares regression analysis. They recommended the use of statistical models designed especially for truncated distributions, such as Tobit analysis.

Measures of absenteeism are nearly always based on organizational records. However, it is also possible to measure absenteeism with data collected by questionnaires and interviews. Not only are the latter data less costly for researchers than the use of records, but they also make it possible to obtain absenteeism data from the many organizations that do not collect this type of information. There are thus some advantages in using questionnaire and interview data. A questionnaire item from the work of Kim *et al.* (1995) – the second measurement selection – is offered as an example of this type of data. Research must, of course, be performed on the validity and reliability of questionnaire measures of absenteeism. Inclusion of Kim *et al.*'s item may help to stimulate this type of research.

### **Chadwick-Jones *et al.* (1982)**

#### *Description*

The primary concern of this study was to explain absenteeism from a social exchange perspective, with special attention given to the role of satisfaction as a determinant. A secondary concern of the study was to suggest measures of voluntary absenteeism. Data were collected from 21 organizations (16 British and five Canadian) over a ten-year period (1970 to 1980). The 21 organizations

included both blue-collar and white-collar employees; the organizations were clothing firms (four organizations), foundries (four), automated process units (four), public transport companies (four), banks (three), and hospitals (two). A total of 6,411 employees (4,000 males and 2,384 females) were sampled[6].

*Definition*

Absenteeism is defined as unscheduled time away from work (p. 116). Chosen and unchosen absences are distinguished.

*Data collection*

The absenteeism data are from organizational records. Reference is made to standardized personnel information, relevant employee records, and individual record cards (pp. 79-81).

*Computation*

Three measures of absenteeism are used regularly: time lost, frequency, and number of short-term absences (p. 100). Time lost is the total number of working days lost in a year for any reason; frequency is the total number of absences in a year, regardless of duration; and short-term absences is the total number of one-day or two-day absences in a year. Strikes, layoffs, holidays, and rest days are excluded from the computation of time lost. It should be noted that time lost is stated in terms of "days lost" rather than "hours lost", and frequency is often referred to "the inception rate". It should be stressed that both one-day absences and two-day absences are included in computation of the short-term measure; this inclusion provides greater measurement stability. Other measures of absenteeism are discussed (pp. 19-23, 63, 83-5), but time lost, frequency, and short-term absences receive the greatest attention.

Frequency and short-term absences are, according to the researchers, the preferred measures of voluntary absenteeism. Both measures will to some extent tap involuntary absence, but it is the time-lost measure that is more sensitive to long-term absences, which are more likely to be involuntary. The exercise of choice, in short, is most apparent in frequency and short-term absenteeism.

The researchers present little information about means and standard deviations, because their social exchange perspective leads them to expect that the three measures would either be organization-specific or would characterize a class of similar organizations. The amount of absenteeism in an organization represents an exchange of benefits between the employer and the employee, and such an exchange is not likely to follow a general pattern across organizations. Means and standard deviations are, however, presented for each of the 21 organizations (pp. 64-75). The computations for time lost, frequency, and short-term absences are stated with the individual as the unit of analysis. These individual data were apparently aggregated to produce the means and standard deviation for the 21 organizations[7].

*Validity*

The strategy of validation has two elements (pp. 61-78). First, the three measures are correlated with a fourth measure, the worst day index (p. 60)[8], which is based on the difference between the total absence rate on the “worst” (highest) and “best” (lowest) days of the week. The researchers argue that the worst day index reflects chosen absences and should be correlated more highly with frequency and short-term absences than with time lost. The second element of the validation strategy involves correlating the three measures of absenteeism with turnover. The researchers argue that high levels of short-term absences coincide with high turnover, but that high levels of long-term absences, which are more often sickness, are not associated with turnover. If this argument holds, then time lost, since it represents more long-term absences, should be less highly related to turnover than are frequency and short-term absences.

The results are as expected. Especially interesting are the strong correlations between short-term absenteeism and the worst day index, which support the short-term measure as a sensitive indicator of voluntary absenteeism. The correlations of turnover with time lost, frequency, and short-term absenteeism are 0.12, 0.35, and 0.49 (significant at 0.05) respectively.

*Reliability*

Information about reliability is presented in the measurement discussion of voluntary absenteeism. Split-half coefficients are presented for the 16 British organizations (pp. 62-3). Time lost has no negative coefficients and only one coefficient that is very low (0.17). Three negative coefficients and one zero coefficient are found for frequency. Short-term absenteeism has one negative coefficient and four that are very low (0.18, 0.10, 0.08, and 0.06). Time lost thus turns out to be the most reliable measure, with the short-term measure the next most reliable.

*Comments*

This research represents a major empirical effort in the study of absenteeism, and any scholar who works in this area will have to give it serious attention. Unfortunately, however, the lack of the standard format – problem, causal model, methodology, results, and summary/conclusion – makes it difficult for readers to abstract the basic descriptive data to understand what the study is about. On the positive side, the diversity of the sample and site is commendable and is necessary to demonstrate the plausibility of the authors’ social exchange perspective.

The definition used for absenteeism in the study is identical to the one that the handbook proposes. Chosen and unchosen absences correspond to the handbook’s voluntary/involuntary typology. More time should have been devoted to defining absenteeism, however. The voluntary/involuntary topology, which is the more important topic, is given a thorough discussion; everything that should be noted is noted.

However, the value of the voluntary/involuntary topology is not established by the research. It is not clear, for instance, that different determinants are required to explain voluntary and involuntary absenteeism. Demonstrating the value of this topology will require a sophisticated causal model, plus valid and reliable measures of voluntary and involuntary absenteeism. The researchers, of course, were not seeking to establish the value of the voluntary/involuntary topology; they simply accepted a topology widely used in the literature.

The researchers carefully describe the sources of their data. As is true of most research on absenteeism, organizational records were the source used. The researchers casually mention a feature of their work that requires emphasis, namely, that no organization was selected unless there existed "comprehensive absence data in the form of an individual record card for every employee" (p. 83). The handbook would add that standardization in recording these data is also to be sought.

Time lost and frequency are widely used measures of absenteeism, so there is nothing innovative about the use of these measures. Short-term absenteeism, however, is not so widely used, and the researchers are to be applauded for suggesting this as a measure of voluntary absenteeism. Given their social exchange perspective, it is understandable that the researchers are reluctant to provide means and standard deviations for their measures. Since they provide these statistics for each of the 21 organizations, however, it would have been consistent with the researchers' perspective to provide these statistics for the different types of organizations – clothing firms, foundries, and so forth. Baseline data of this type are very helpful to other researchers. Where the means and standard deviations are provided, it is not clear exactly how time lost, frequency, and short-term absences are computed, since the study identifies slightly different ways to compute these three measures. What the handbook has done is to identify the most commonly used computational procedure of each measure.

The measures suggested by the researchers use one year as the time interval for measuring absenteeism. They do not, however, address the problem created by turnovers and hirings during the year being studied. In particular, the employee who leaves or is hired in the middle of the year is likely to have fewer absences than the employee who is employed for the entire year. This problem requires that the amount of time on the payroll be used to standardize these measures. One way to do this would be to divide the number of months employed into the total number of absences, so as to produce a measure of average number of absences per month. Multiplying by 12 would then give the number of absences in the year.

The care devoted to the validation of voluntary absenteeism is laudable. However, the measurement of voluntary absenteeism is not a settled issue. There is, as previously noted, support in the literature for the researchers' contention that voluntary absenteeism is best measured by frequency and short-term absences. However, frequency and short-term absences are clearly imperfect measures of voluntary absenteeism, since each contains unknown

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components of involuntary absenteeism. A sustained research project, probably focusing exclusively on measurement, will likely be necessary to obtain a valid and reliable measure of voluntary absenteeism.

The researchers use split-half coefficients to calculate reliability coefficients, but they might have found helpful a little-used method for calculating a reliability coefficient[9]. This method involves computing Pearson correlation coefficients for employees for different time periods. If three periods, for example, have been used, then three different coefficients would be computed – between the first and second periods, between the first and third periods, and between the second and third periods. An average can then be calculated for the three coefficients. This method resembles the split-half coefficients used by the researchers, except that many periods, not just two, can be used as the basis of the calculations.

*Source*

Chadwick-Jones *et al.* (1982), who have published extensively in the area of absenteeism and this book cites many of their other publications.

**Kim *et al.* (1995)**

*Description*

This study was designed to compare self-reported absences with records-based absences. The study was part of a larger project (Cyphert, 1990) which estimated a causal model of absenteeism based on data collected from organizational records. A large (478-bed), midwestern, urban hospital was the site of the study. The hospital was a major medical centre, with more than 2,000 employees.

The sample consisted of full-time employees, most of whom were highly-educated professionals: 94 per cent, for instance, had completed undergraduate or higher degrees; 65 per cent of the employees were nurses; 61 per cent were married and 73 per cent were in their 20s or 30s. The average length of service was about seven years. Physicians were not included in the sample because they were self-employed.

From the larger project on which this study was based, it was possible to identify 303 respondents who had both questionnaire and records-based data about absenteeism. Data about absenteeism were thus available from two sources, questionnaires and self-reports, about the same respondents for the same period of time. Nine outliers were excluded from the sample, thereby reducing the final sample to 294.

*Definition*

Absenteeism is defined as the non-attendance of employees for scheduled work. The research reported in this paper is concerned only with voluntary absence.

*Data collection*

Information on employee absences was collected from records and by questionnaires. Records-based data were obtained from hospital payroll records. Self-reported data were obtained by questionnaires which were distributed through the hospital's mailing system in February 1989. Two weeks after the initial distribution, a reminder notice and second survey were distributed. Surveys were returned to the university sponsoring the research and were used if they were received in February and March. Each questionnaire had an identification number to enable matching with records. The meaning of the identification number was explained to the respondents, who were also informed that their answers to the questions would be kept confidential.

*Computation*

The number of single days of scheduled work missed for each employee in January 1989 is the measure used in both records-based and self-reported absenteeism data. Single-day absence was selected as the measure, because this type of assessment is generally believed to tap the voluntary aspect of absenteeism, the focus of this paper.

The self-reported measure asked the employee to respond to the following questionnaire item:

How many *single days of scheduled work* did you miss in January? (Note: A half-day to an entire day counts as a single day missed; consecutive days missed should not be included in the calculation. Ignore whether or not you were paid for the days missed and do not count days off in advance, such as vacations and holidays.)

The records-based measure is the total number of single-day absences in January, as recorded in the hospital's payroll records.

*Validity*

The statistics for the records-based and self-reported measures of single-day absences are shown in Table I. More than half of the employees had no single-day absences in January, as indicated by both records (77.2 per cent) and self-reports (66.0 per cent). Employees who had one or more absences make up the other 22.8 per cent of records-based data and 34.0 per cent of self-reported data. The mean number of self-reported absences per person (0.47) is almost double the mean number of officially-recorded absences per person (0.27). The standard deviations differ by 0.22, although the median and mode are identical. Both distributions are positively skewed because of a relatively large number of zero scores, but the skewing is slightly less for the self-reported measure (1.55) than for the records-based measure (2.02).

What is most important for assessing the relationship between the two measures, however, is the correlation between them. If the two measures reflect the same underlying concept, then there should be a high positive correlation between the measures. The Pearson correlation coefficient between the two measures is 0.47. Although it has the expected positive sign, the magnitude of the relationship is moderate.



Number of absences	Records-based	Self-reported
0	227 (77.2)	194 (66.0)
1	57 (19.4)	68 (23.1)
2	9 (3.1)	25 (8.5)
3	1 (0.3)	7 (2.4)
Total	294(100.0)	294(100.0)
Means number of absences per person	0.27	0.47
Median	0.00	0.00
Mode	0.00	0.00
Standard deviation	0.53	0.75
Skewness	2.02	1.55
Pearson $r$		0.47

**Note:** Figures within parentheses are percentages

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**321**

**Table I.**  
Frequency distributions  
and summary statistics  
for records-based and  
self-reported measures  
of absenteeism

### *Reliability*

No information is provided about reliability.

### *Comments*

The definition of absenteeism used in this study is the one proposed by the handbook. Similarly, the topology of absenteeism, voluntary and involuntary, is also the handbook's.

Data were collected only for the month of January. More confidence in the results would exist if the data had been collected for a longer period, such as three months, because the data would be more stable. The proper period of time to be used should be researched. Since this study was part of a larger project oriented to estimating a causal model of absenteeism with data collected for three months, this extra data collection was not easily done. More research must examine the use of self-reported measures of absenteeism and one purpose of this study was to encourage such research.

The questionnaire item used to collect data needs refinement. For example, it is not clear how much of the fairly extensive "note" is understood by the respondents. Again, further research is needed on this topic.

This study does not discuss the problem of converting organizational records into a form which can be used by researchers. Organizational records, for example, may have data about single-day absences categorized under a half-dozen different labels. If the researcher does not locate and understand these different categories, the data collected will not be accurate. Problems of this type are one reason to search for a valid and reliable self-report measure. Few reports of absenteeism discuss the problem of converting organizational records into a form which researchers can use.

The moderate relationship (0.47) between the records-based and self-reported measures of absenteeism is not high enough to argue that measures from these two sources are assessing the same underlying construct.

Nonetheless, it is a significant improvement over the relationship (0.30) found by Mueller and his colleagues (1987) – a similar study to the present one – and constitutes progress towards the long-term goal of developing a valid and reliable self-reported measure of absenteeism.

The obtained correlation is a conservative estimate for three reasons. First, since the number of single-day absences as a measure of voluntary absenteeism has not been thoroughly evaluated by empirical studies, the measure probably has some measurement error which will attenuate the correlation obtained. Because a measure of reliability was not available in this study, it was not possible to correct the obtained correlation for measurement error. Second, the obtained correlation is conservative, because the value of the correlation coefficient tends to be constricted when applied to a skewed, truncated distribution (Carroll 1961; Hammer and Landau, 1981). The third reason for the correlation being conservative is that the measurement of both records-based and self-reported absences was based on a relatively short period of one month. Based on Atkin and Goodman (1984), it could be argued that a correlation of 0.47 for a short period of time would be as good as one of, say, 0.70, for a longer period of time. This is because the longer period makes it possible to approximate more closely the typical distribution of absence data, thereby allowing the data's theoretical maximum correlation to approach unity (1.00). In this sense, it may be argued that the correlation obtained in this study is a significant improvement over that of Mueller *et al.* (1987) which was obtained from a six-month period. Taken together, these three points strongly support the argument that the obtained correlation of 0.47 is conservative, and that the real relationship between the two measures of absenteeism is stronger considering the measurement error, shape of the distribution, and the time interval on which the measurement is based. Though data should have been collected regarding reliability, it is understandable that the demands of the larger project precluded such collection.

*Source*

Kim *et al.* (1995).

**Notes**

1. Despite the measurement problems, the voluntary/involuntary dichotomy is a widely used distinction. Social psychologists distinguish voluntary and reflexive (involuntary) behaviour (Lawler, 1973, pp. 2-3). Sociologists often distinguish social systems by whether membership in these systems is based on ascription or achievement (Merton, 1957, p. 317). For example, membership in families is ascribed, whereas membership in work organizations is achieved. Ascription and achievement roughly correspond, respectively, to involuntary and voluntary. The turnover literature also uses the voluntary/involuntary topology (Price, 1977, p. 9). Finally, for a legal contract to be valid, at least in Western countries, the contract must be entered into without coercion, that is, voluntarily (Granovetter, 1974, p. 120)
2. Turnover will be treated in Chapter 29.
3. Involvement will be treated in Chapter 16.

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4. The work of Hill and Trist (1962) is an illustration of this Tavistock research. The idea of withdrawal from work is also frequently found in the work of scholars from the Survey Research Center of the University of Michigan (Indik, 1965). Hulin and his colleagues (Roznowski and Hulin, 1992) argue that research on absenteeism and turnover should be included as components of withdrawal. They believe that specific concepts like absenteeism and turnover, plus other forms of withdrawal, cannot be explained by general determinants, such as job satisfaction and organizational commitment. Research needs to test the ideas of Hulin and his colleagues. If they are correct, research on the components of withdrawal will be drastically affected.
  5. The following literature is relevant for the time-lost measure: Behrend (1959); Buzzard (1954); Covner and Smith (1951); Jones (1971, pp. 8-10); Van der Nout *et al.* (1958). For the frequency measure, see the following sources: Beehr and Gupta (1978); Breaugh (1981); Covner (1950); Hammer and Landau (1981); Huse and Taylor (1962); Johns (1978); Metzner and Mann (1953); Patchen (1960). Material pertinent to measures of one-day or two-day absences, mostly the former, is found in the following publications: Behrend and Pocock (1976); Edwards and Whitson (1993); Froggatt (1970); Gupta and Jenkins (1982); Hackett and Guion (1985); Martin (1971); Nicholson *et al.* (1977); Pocock *et al.* (1972). Rhodes and Steers (1990) provide a general review of the absenteeism literature.
  6. The 4,000 and 2,384 do not sum to 6,411 because data about gender were not obtained for 27 employees.
  7. The handbook has described the data as "apparently aggregated" because, at other places in the book (pp. 19-23 and pp. 83-5), the researchers present variations of the three measure which use the organization as the unit of analysis.
  8. Another measure, the Blue Monday Index, is also used in this validation. The Blue Monday Index, however, is not as important as the Worst Day Index.
  9. This method of calculating a reliability coefficient was suggested to the author by Professor Tove Hammer of Cornell University.

### **3. Administrative intensity**

#### **Definition**

Administrative intensity is the extent to which an organization allocates resources to the management of its output[1]. Key management activities are making decisions, co-ordinating the work of others, and ensuring conformity with organizational directives. Management activities are contrasted with production activities, which involve direct work on an organization's output. Through their decision making, co-ordinating, and controlling, managers are indirectly involved in producing the output of an organization. An organization with a high degree of administrative intensity is sometimes said to have a relatively large "administrative apparatus" or "supportive component". Administrative staff and production staff are common labels for administrative employees and production employees respectively.

It is important not to identify specific occupations with the administrative staff. An accountant in a hospital will be part of the administrative staff, whereas the same accountant employed in an accounting firm will be part of the production staff. Similarly, a professor in a university, when involved in teaching and research, is part of the production staff; the same individual, when involved in managing an academic department, is part of the administrative staff.

Since both administrative and production activities are essential for organizational effectiveness[2], the handbook has avoided referring to administrative activities as "overhead". It is true that productivity[3] is enhanced by low administrative intensity, and, in this sense, administration is overhead. Use of a negative term like overhead, however, detracts from the recognition that administrative activities are essential for organizational effectiveness. The handbook agrees with most scholars that the use of neutral terms is more consistent with the tenets of scientific investigation.

The term "intensity" is a fortunate choice of labels for discussing administration, because of its widespread usage concerning labour and capital. An organization is said to have a high degree of labour intensity when production of its output requires the use of a relatively large number of employees. A hospital is an example of such an organization. An organization is said to have a high degree of capital intensity when production of its output requires relatively heavy use of equipment. An oil refinery with continuous-process equipment is an example of such an organization.

Administrative intensity must be linked to the classic work of Weber[4]. The term "bureaucracy" in Weber's work corresponds to the handbook's "administrative staff". Most contemporary research refers to administrative staff rather than bureaucracy, because it is very difficult to avoid the negative connotations associated with bureaucracy – again the scholarly preference is for the more neutral label. Weber never intended the negative connotations that have developed. Although he never provided a general definition of

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bureaucracy, Weber did describe various types of bureaucracy. The most common type referred to in the literature is the “rational variant of bureaucracy”, with its hierarchy of authority, clear specification of duties, and so forth.

What this handbook has done is to treat the most commonly used components of the rational variant of bureaucracy as separate concepts. Two illustrations: hierarchy of authority is captured by “centralization” and the clear specification of duties is treated as “formalization”. In other words, rather than using the single rational variant of bureaucracy, the handbook has used the components, such as centralization and formalization, that are widely studied in the area of organizational research. The work of Weber is thus important in the handbook, but it does not appear as “bureaucracy” or its “rational variant” with all components specified[5]

### Measurement

When this handbook was first published in 1972, Melman’s *A/P* ratio was clearly the measure of administrative intensity most widely used in the literature[6] The *A* and *P* in this ratio refer to the administrative staff and the production staff respectively. In the 1970s, a number of scholars (Child, 1973; Freeman and Hannan, 1975; Kasarda, 1974) suggested separating the administrative staff into its components, such as administrators, professionals, and clerks[7]. The undifferentiated ratio is believed to be misleading. An increase in size may, for example, reduce the number of administrators but increase the number of clerks. The different direction of these changes will not be indicated by an undifferentiated ratio, such as Melman proposed. Currently, there is almost no use of an undifferentiated concept of administration to measure administrative intensity, and the three measurement selections – Blau (1973); Kalleberg *et al.* (1996); McKinley (1987) – embody this current practice.

The first edition of this handbook viewed “span of control” as a separate concept. Partly because of the important measurement work of Van de Ven and Ferry (1980, pp. 288-95), it is now apparent that the span of control is one way to measure administrative intensity[8]. The widely-cited study by Blau and Schoenherr (1971) uses span of control to measure administrative intensity.

Most measures of administrative intensity rely on data based on “occupations”. Melman’s *A/P* ratio is an example, as are all uses of differentiated concepts of administration. The members of the administrative staff are, in the final analysis, identified by their occupational labels, such as administrators, professionals, and clerks. The use of occupational data has two serious weaknesses, however. First, as Ouchi and Dowling (1974) have indicated, administrators are sometimes involved directly in producing the organization’s output. For instance, nursing unit supervisors in hospitals, while mostly engaged in administrative activities, often provide direct patient care. To classify all administrators as administrative staff employees results in an overestimation of the amount of organizational resources allocated to management activities. Second, occupational labels are sometimes misleading

regarding the content of work. "Co-ordinators" in some hospitals are an example. Some co-ordinators, such as those involved in various types of education, are performing administrative activities, whereas other co-ordinators, such as those involved in disease control, are performing activities very closely associated with direct patient care. To classify all co-ordinators as members of the administrative staff is to overestimate the amount of hospital resources allocated to management activities. The three measurement selections use data based on occupations. Care must be exercised in interpreting all such measures, especially if the studies are large and the researchers do not have time to examine carefully each occupation included in the study.

Historically, most measurement of organizational variables has been based on questionnaires, and, as discussed in the introductory chapter, one purpose of this handbook is to encourage greater use of records. Administrative intensity is nearly always measured with data from records and the Blau selection is an illustration of this pattern. The two new selections, Kalleberg *et al.* (1996) and McKinley (1987), however, make use of the more common questionnaire and interview methods.

"Definitional dependency" is a widely discussed topic in studies of administrative intensity (Bollen and Ward, 1979; Bradshaw *et al.*, 1987; Feinberg and Trotta, 1984a, 1984b, 1984c; Firebaugh and Gibbs, 1985; Freeman and Kronenfeld, 1973; Fuguitt and Lieberman, 1974; Kasarda and Nolan, 1979; MacMillan and Daft, 1979, 1984; Schuessler, 1974). The concern is that the same terms may be included in both the numerator and denominator of a ratio. If, for example, Melman's *A/P* ratio is used to measure administrative intensity, and if size is suggested as a determinant of administrative intensity, when the model is estimated, size will be included in both the numerator and denominator. This is because the number of administrators plus the number of producers equals the size of the organization.

The concern with definitional dependency was most intense during the 1970s and the early 1980s. This concern seemed to inhibit research on the determinants of administrative intensity, since the issue was not clearly resolved and ordinary researchers did not quite know what to do. Current research either adjusts to the concern without much fanfare – the McKinley selection is an illustration of this adjustment – or completely ignores the topic, as illustrated by the Kalleberg *et al.* selection. The concern, while not openly resolved, seems mostly to have faded away.

### **Blau (1973)**

#### *Description*

This study examined how the organization of an academic enterprise affects work, that is, "how the administrative structure established to organize the many students and faculty members in a university or college influences academic pursuits" (p. 8). In more popular terms, the issue posed refers to the relationship between bureaucracy and scholarship.

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Data were collected on 115 universities and colleges and constituted a representative sample of all four-year organizations granting liberal arts degrees in the USA in 1964[9]. Junior colleges, teachers' colleges, and other specialized enterprises, such as music schools and seminaries, were excluded from the sample. A specific academic organization, not a university system, is defined as a case. This means that the University of California is not considered as a case, but its Berkeley campus is so considered. The data were collected in 1968. Additional information on individual faculty members in 114 of these universities and colleges was made available to Blau from a study conducted by Parsons and Platt (1973). Data were, therefore, available about the academic organization as a unit and about the faculty members within these organizations. The academic organization was the unit of analysis.

#### *Definition*

Administration is defined as "responsibility for organizing...the work of others" (p. 265). Blau is most concerned with explaining the relative magnitude of the administrative component and how this component influences other features of universities and colleges, such as their centralization.

#### *Data collection*

Data for measurement of the relative magnitude of the administrative component came from interviews with an assistant to the president in each university and college. These interviews appear to have yielded records from which the measures were constructed.

#### *Computation*

Two measures of the relative magnitude of the administrative component are used: the administration-to-faculty ratio and the clerical-to-faculty ratio (p. 287). The administration-to-faculty ratio is "the number of professional administrators divided by the total number of faculty". Included among the faculty are both full-time and part-time members. The clerical-to-faculty ratio is "the number of clerical and other support personnel divided by the total number of faculty" (p. 287). Secretaries are an example of clerical personnel.

#### *Validity*

No explicit treatment of validity is provided. There is some support for validity, however, since the findings about the impact of size and complexity on the relative magnitude of the administrative component in this study of universities and colleges (pp. 249-80) parallel the findings on this same topic reported in the Blau and Schoenherr (1971) study of state employment security agencies.

#### *Reliability*

No information is provided about reliability.

*Comments*

This study, plus the one by Blau and Schoenherr (1971), are the two major works on administrative intensity conducted during the 1970s; all subsequent research on this topic must take these two studies into account.

To appreciate their significance, these two studies must be placed in historical context. Organizational research in the 1930s, 1940s, and 1950s mostly focused on case studies. This focus, while ideal for the generation of ideas, does not permit rigorous estimation of propositions. Case studies illustrate rather than estimate propositions. In the late 1950s and early 1960s, however, three groups of researchers began to expand the sizes of their samples significantly – Woodward (1965) and the Aston Group (Pugh and Hickson, 1976; Pugh and Hinings, 1976) in the UK and Blau and his colleagues in the USA. The size of the Blau and Schoenherr sample (51 agencies, 1,201 local offices, and 387 functional divisions), for example, is literally beyond the comprehension of early organizational scholars and represents a major step forward in the study of organizations[10].

Blau's concern with explaining the relative magnitude of the administrative components, sometimes termed the "administrative apparatus", corresponds to the handbook's administrative intensity. As with the Blau and Schoenherr (1971) study, measurement of administrative intensity is based on records. The use of records is commendable.

As is the custom with contemporary research on administrative intensity, Blau differentiates administration into components: professionals, administrators, and clerks. However, he does not provide much information about the content of these categories. With respect to the clerical ratio, for instance, only secretaries are cited as an illustration. Nor is the meaning of "other support personnel", which is part of clerical personnel, specified[11]. The meaning of these key terms is not obvious, and more detail should have been provided. Blau and Schoenherr's study of state employment security agencies (1971) refers to "staff" and "maintenance" components of administration, but this study of academic organizations makes no reference to these components. The reader wonders why the staff and maintenance components were excluded; a rationale should have been given for this exclusion.

Span of control is used as a measure (p. 29), but not of administrative intensity. Since it was a key measure of administrative intensity in the Blau and Schoenherr study (1971), a rationale for its exclusion should have been provided. Span of control does not appear to possess high validity as a measure of administrative intensity; Blau should have made this argument if this is why span of control is not used. The administration-to-faculty ratio and the clerical-to-faculty ratio, since they are based on occupational data, are subject to the types of validity problems discussed in the general measurement section. Measurement problems of this type are not treated by Blau. Nor does Blau discuss the issue of definitional dependency, probably because the topic was only beginning to be treated in scholarly journals when his study was



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published. The failure to treat issues of validity and reliability explicitly is a major weakness of this significant study.

Administrative  
intensity

*Sources*

In addition to Blau (1973)[12], also relevant is Blau and Schoenherr (1971).

**McKinley (1987)**

**329**

*Description*

The purpose of this research was to investigate the moderating effect of organizational decline on the relationship between technical and structural complexity, on the one hand, and administrative intensity, on the other. Organizational decline is defined "...as a downturn in organizational size as performance that is attributable to change in the size or qualitative nature...of an organization's environment" (p. 89). Technical complexity is based on the work of Woodward (1965) and is defined as "...technological sophistication and degree of predictability of a production system" (p. 88). Following Hall (1982), structural complexity is viewed as having three subdivisions: horizontal differentiation of tasks among different occupational positions or organizational subunits; vertical differentiation into distinct hierarchical levels; and spatial dispersion of subunits or members of an organization (pp. 88-9).

The data used in this study were drawn from a survey of 110 New Jersey manufacturing plants. Data were collected on the manufacturing plant at a particular site and not on the larger company that owned the plant. An earlier study (Blau *et al.* 1976) made use of the same data as this study.

*Definition*

Administrative intensity is defined "...as the size of the administrative component relative to the rest of the organization's population" (p. 88).

*Data collection*

Data were gathered in each plant by a questionnaire administered to the plant manager, personnel manager, and head of production. The respondents were asked two questions: the "total number of full-time personnel employed at this site" and the "total number of full-time supervisors"[13]. Full-time supervisors included all managers and foremen who customarily directed the work of two or more other people and whose primary responsibility was supervising their work rather than participating in its performance. Only full-time supervisors in the manufacturing site were included in the collection of data. Supervisors located in the headquarters unit, for example, did not complete questionnaires.

*Computation*

Administrative intensity is "...measured by the ratio of full-time supervisors to remaining plant employees...". (p. 93). The number of remaining plant employees was obtained by subtracting the number of full-time supervisors from the number of full-time personnel employed at the site. To obtain a

percentage, the ratio is multiplied by 100. Supervisors constitute 9 per cent of the non-supervisory employees[14]. The use of non-supervisory employees as the denominator, rather than all plant employees, avoids the problem of having the same term (full-time supervisors) included in both the numerator and denominator – the problem of definitional dependency referred to previously in the measurement discussion.

#### *Validity*

Based on a review of the literature, the following proposition was estimated: “the greater the tendency toward organizational decline, the less positive the relationship between technical and structural complexity and administrative intensity in organizations” (p. 91). Organizational decline was measured by the change in the total number of plant employees from 1967 to 1972. Technical complexity was measured in two ways, a seven-category version of Woodward’s (1958, 1965) original 11-category technical complexity scale and the percentage of product inspections done by measuring devices or machines (p. 92). Structural complexity was measured by the number of major structural subunits whose heads reported directly to the plant manager (p. 93). The results of the analysis support the proposition: the positive relationship between complexity and administrative intensity depends on whether the organization is growing or declining.

#### *Reliability*

No information is supplied about reliability.

#### *Comments*

The clear definition of the moderating variable (organizational decline) and the determinants (technical and structural complexity) is laudable. It is not necessary to puzzle over the meaning of the key concepts since they are explicitly defined.

Administrative intensity corresponds exactly to the handbook’s definition. Again, the clarity of the definition is a positive feature of the study.

Given the variables examined, the collection of data from three top executives is appropriate. Had social psychological variables – such as organizational commitment, involvement, and job satisfaction – been studied, this type of data collection would have been inappropriate. Blau and his colleagues, plus the previously mentioned research by Woodward and Aston, were able to use such large samples because they were mostly collecting data about variables that could be supplied to them, in a fairly brief period of time, by top executives.

The computation of administrative intensity takes into account the type of concern raised in discussions of definitional dependency. This is another positive feature of the research.

The assessment of construct validity conforms to a long tradition in measurement research, namely, assessing the extent to which the measures used produce findings that are consistent with existing theory.

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Information should have been provided about reliability. However, given the nature of the measure used and the method of data collection, it was very difficult to assess reliability. Had a combination of indicators been used rather than a single indicator, assessment of reliability – with coefficient alpha for instance – would have been straightforward. It is also very difficult to collect data from very busy top executives, probably in an intensive session, and then request another meeting in a month or so to ask the same questions again! Even if they intellectually grasp the need for data about reliability, the executives would have considerable difficulty in granting a second meeting to the researchers.

*Sources*

In addition to the McKinley (1987), also relevant is Blau *et al.* (1976).

**Kalleberg *et al.* (1996)***Description*

The National Organizations Study (NOS), the label for the study reported in this book, was designed to collect information from a nationally representative sample of American organizations. The sample was generated by asking respondents to the General Social Survey (GSS), conducted by the National Opinion Research Center (NORC), to give the names, addresses, and telephone numbers of the establishments that employed them and their spouses. There were 727 establishments were included in the sample. Establishments were sampled rather than the larger organizations which contained the establishments. The study is cross-sectional and was conducted in 1991.

*Definition*

The NOS includes data about a large number of organizational variables. At this point, the concern is with administrative intensity. No explicit definition of administrative intensity is given in the study. However, since the NOS's material about administrative intensity relies heavily on the work of Blau, his definition – discussed when the first selection was described – is implicit. The computational data to be presented is consistent with an implicit use of Blau's view of administrative intensity.

*Data collection*

The data for the NOS were collected by telephone interviews with a single informant in the organization (pp. 95, 137). For administrative intensity, the critical data pertain to the number of managers and the total number of employees. The telephone interview asked the respondents: "The last group I'd like to ask you about is managers and other administrators. Were there any on the payroll as of March 1, 1991?" (Question number 29a on the telephone-interview schedule). If a positive response was given, the following question was asked: "How many were there (including full and part time)?" (Question number 29b).

The total number of employees was obtained with two questions: "In total, how many full-time employees worked at (organization) as of March 1, 1991? By full-time we mean 35 or more hours per week" (Question number 5a) and "In total, how many part-time employees worked at (organization) as of March 1, 1991?" (Question number 5a). As indicated, the questions asked of the respondents come from the telephone-interview schedule rather than the book.

*Computation*

The NOS indicator of administrative intensity is the proportion of managers among employees (unweighted mean = 0.21; median = 0.11; SD = 0.26) (p. 73). Since the NOS sample of establishments is based on a sample of individuals from the GSS, unweighted and weighted statistics are available. The unweighted statistics refer to the typical work settings in which each employee in the US labour force is employed; each worker is given an equal weight. Establishments that employ many people have proportionately higher chances of being included in the NOS. If no weighting is done, the descriptive statistics will be skewed to the larger establishments. When the observations in the NOS sample are weighted inversely proportional to the number of employees in an establishment, the statistics represent the population of US establishments; each establishment has an equal probability of inclusion. No weighted statistics are presented for the proportion of managers.

*Validity*

Based on the literature, the NOS summarizes a set of nine propositions pertaining to the determinants of administrative intensity (p. 72). The propositions are as follows: size positively impacts vertical complexity; size positively impacts on horizontal complexity; vertical complexity positively impacts on decentralization and negatively impacts on administrative intensity; horizontal complexity positively impacts on formalization and negatively impacts on administrative intensity; decentralization negatively impacts on formalization and administrative intensity; and formalization negatively impacts on administrative intensity.

The propositions were then estimated with the NOS data and all were confirmed (p. 72).

*Reliability*

No data about reliability were collected.

*Comments*

The collection of data about a representative sample of American organizations constitutes a major advance in the study of organizations, probably the most significant advance since the large samples of Woodward, Aston, and Blau in the 1950s and 1960s. Data of this type have not been available until this study and promise to extend significantly the ability to generalize about US organizations. Because improved generalization constitutes an essential

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ingredient in the growth of science, the handbook hopes that money can be found to repeat this study in the near future.

Administrative intensity is not clearly defined. This lack of clarity was helped somewhat by locating the study in the Blau tradition of research on this topic. However, the concept should have been precisely defined.

The NOS contains quite a bit of information about the interview items used to collect the data. However, there are gaps which occur and one such gap pertains to administrative intensity. Kalleberg graciously supplied the interview schedule to the author of the handbook. Replication would be eased had the interview schedule and the measurements been included at the end of the report. Publishers resist such inclusions, but the significance of the NOS requires their inclusion.

No information is given about the position of the interviewers. It is likely that a high official in the human resources area supplied the information, since the data requested are very complicated. Such positional information helps to evaluate the quality of the data collected, and should have been provided.

A substantial amount of information was requested from the interviewer and it would be helpful to have an approximation of the average length of time of each interview. The longer the interview, the more concern there is about the quality of the data obtained.

The computation of the managerial ratio illustrated no awareness of the issue of definitional dependency. It would have been a simple matter to have excluded the number of managers from the number of employees, as in the McKinley study. Since data were collected about full-time and part-time managers, it is not clear whether or not both types of managers were included in the computations. This information needs to be reported. Finally, the NOS usually presents both unweighted and weighted statistics; however, for administrative intensity only the unweighted statistic is presented. As previously indicated, the unweighted statistics represent individuals and not establishments and needs to be supplemented by the weighted statistics. The customary mode of presentation should have been followed.

The checking for construct validity is traditional, namely, ascertaining whether application of the measures yields results which are consistent with existing theory. Since the results are consistent with existing theory, the measures appear to have adequate validity.

Ideally, data about reliability are preferred. However, given the nature of the measure – a single item rather than a set of items – and the cross-sectional nature of the study, it is understandable that data about reliability were not collected.

#### *Sources*

In addition to Kalleberg *et al.* (1996), also related are Marsden *et al.* (1994) and Kalleberg and Van Buren (1996).

**Notes**

1. This definition is based on Blau (1973, p. 267); the term “administrative intensity” comes from Pondy (1969).
2. Effectiveness will be treated in Chapter 9.
3. Productivity will be treated in Chapter 22.
4. This discussion of Weber is based on Albrow (1970).
5. Bureaucracy is not always defined as the administrative staff, however. Some scholars use sets of variables from Weber’s rational variant of bureaucracy as the definition (Blau and Mayer, 1971; Gouldner 1954; Pugh and Hickson, 1976). Blau and Mayer, for example, define bureaucracy by a set of four variables: specialization, a hierarchy of authority, a system of rules, and impersonality (p. 9). In different research, the same scholar – Blau is an example – uses both administrative staff *and* a set of variables to define bureaucracy. The handbook’s definition of bureaucracy as the administrative staff is widespread in the literature.
6. A discussion of Melman’s *A/P* ratio is found in Price (1972b, pp. 19-26). Granick’s *The Red Executive* (1960) and *The European Executive* (1962, pp. 288-95) provide additional data using Melman’s ratio. Granick was one of the scholars responsible for the wide use of this ratio.
7. Rushing (1966, 1967) suggested even earlier differentiating administration to its components.
8. The work of Ouchi and Dowling (1974) also treats span of control as a measure of administrative intensity and reinforces the conclusion the handbook drew from the work of Van de Ven and Ferry (1980).
9. Additional information about the sample is found in Appendix A of Blau’s book (pp. 281-84).
10. Unfortunately, little research in the Aston tradition is currently being done in the UK. A major scholar working in this tradition is Donaldson (1985, 1995).
11. “Other support personnel” are not mentioned in the text (pp. 28-9) when the clerical-faculty ratio is discussed. The computation given for this ratio comes not from the text, but from Appendix B of Blau’s book.
12. This study and the first edition of this handbook were probably at their respective publishers at about the same time, so the first edition of the handbook could not, unfortunately, make use of this study of universities and colleges.
13. These questions were provided by Professor McKinley.
14. This statistic was computed from data also provided by Professor McKinley.

### Definition

Commitment is loyalty to a social unit[1]. The social unit may be an organization, the subsystem of an organization, or an occupation. Most research on commitment focuses on organizations rather than subsystems or occupations. The different social units within organizations towards which loyalty is directed are sometimes termed “foci” (Becker *et al.*, 1996). The clearest examples of occupational commitment are those of the professions – such as physicians, lawyers, professors, and accountants – and the crafts, such as electricians, machinists, carpenters, and plumbers. If occupation is interpreted in a slightly more general manner – such as a “military officer” or “banker” rather than a “first lieutenant” or “loan officer” respectively – then occupational commitment will apply quite well outside the professions and crafts. The more general interpretation is similar to Aryee and Tan’s (1992) “field of work”. The process of data collection about occupational commitment – by means of lead-in statements on questionnaires, for instance – can also help the respondent interpret occupations in a specific (physician and electrician) and general manner (military officer and banker).

Recent research refers to “attitudinal” and “behavioural” commitment (O’Reilly and Caldwell, 1981). The view of commitment propounded by Porter and his colleagues (Mowday *et al.*, 1982, pp. 26-8) is termed attitudinal commitment by this research, whereas intent to behave in some way, such as continuing to be an employee of an organization, is referred to as behavioural commitment. Since the handbook’s definition is based on the work of Porter and his colleagues, it is an example of attitudinal commitment. Salancik’s work (1977) is one source of the concern with behavioural commitment and has recently attracted considerable attention among organizational scholars (O’Reilly and Caldwell, 1981; Pfeffer, 1982, pp. 52, 190; Staw, 1974, 1976).

Commitment is an orientational concept rather than a structural concept[2]. Orientational concepts have subjective referents, whereas structural concepts refer to patterns of interaction among people. Orientations are invisible to an observer, whereas one can see the interactions that people have with each other[3]. Involvement and satisfaction have traditionally been the major historical focus of organizational scholars interested in orientational concepts[4]. Only since the early 1970s, beginning with the research of Porter and his colleagues, has there been substantial concern with commitment.

Commitment should be related to the work on cosmopolitans and locals, since organizational loyalty is one component of the cosmopolitan-local distinction[5]. Cosmopolitans have less organizational commitment than locals, that is, the cosmopolitans are less loyal to the organization. Commitment does not capture all that is encompassed in the literature about cosmopolitans and locals – the dedication to specialized skills, for example, is excluded – but the critical element of loyalty is caught up in the handbook’s view of commitment.

The most widely cited work on commitment during the last decade has been done by Meyer and Allen[6]. They have made conceptual and measurement proposals and their work will be discussed by Ko (1996) in the third selection. To foreshadow somewhat: the handbook does not agree with Meyer/Allen's conceptual proposals and recommends use of but one of their three measurements. Since Meyer and Allen's work is evolving, it is not clear what will happen to this extensive body of research. In the meanwhile, Meyer and Allen continue to stimulate.

### **Measurement**

The most widely used measure of commitment in the literature is the Organizational Commitment Questionnaire (OCQ) developed by Porter and his colleagues (Mowday and Steers, 1979); the first selection presents this instrument. Extensive use of Porter *et al.*'s view of commitment has probably been furthered by the development of the OCQ. The second and third selections present alternatives to the OCQ.

Kalleberg *et al.*'s (1996) National Organizations Study (NOS) is the first alternative with a measure that is in some ways quite similar to the OCQ. The NOS was previously referred to in the chapter on administrative intensity. Meyer and Allen's measure of "affective commitment" is described and evaluated by the new measurement work of Ko (1996). The Meyer and Allen measure of affective commitment is the second alternative to Porter *et al.*'s OCQ. As much as possible, the handbook seeks to present different types of measures and what is done for the OCQ illustrates this preference. The handbook generally seeks to avoid dissertations as selections; however, Ko's work constitutes an exception, since it is especially well done and is the most recent discussion of Meyer and Allen's important research.

The fourth selection focuses on occupational commitment and uses the most recent research by Blau *et al.* (1993). One of the most encouraging developments since the first edition of the handbook in 1972 has been the appearance of a number of scholars like Blau who devote a sustained amount of time to the production of quality measures. This "Blau" is Gary and not Peter.

### **Mowday and Steers (1979)**

#### *Description*

The purpose of the research reported in this paper was to summarize the research of Porter and his colleagues, which was aimed at developing and validating a measure of employee commitment to work organizations. The instrument is called the Organizational Commitment Questionnaire (OCQ) and the results are based on research carried out over a nine-year period, which included 2,563 employees from nine widely divergent work organizations. The job classifications that represent the nine organizations are as follows: public employees, classified university employees, hospital employees, bank employees, telephone company employees, scientists, engineers, auto company managers, psychiatric technicians, and retail management trainees.



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*Definition*

Commitment is defined as the relative strength of an individual's identification with and involvement in a particular organization (p. 226). In particular, commitment is characterized by three factors: a strong belief in and an acceptance of the organization's goals and values; a willingness to exert considerable effort on behalf of the organization; and a strong desire to maintain membership in the organization (p. 226).

*Data collection*

A self-administered questionnaire of 15 items was used to capture the three factors. Six items were negatively phrased and reverse coded, and seven-point Likert scale response categories were used for all items. A nine-item short form, which includes only the positively worded items, is often used.

The following lead-in statement preceded the 15 items: "Listed below are a series of statements that represent possible feelings that individuals might have about the company or organization for which they work. With respect to your own feelings about the particular organization for which you are now working (company name) please indicate the degree of your agreement or disagreement with each statement by checking one of the seven alternatives below each statement" (p. 228).

The following 15 statements were used to collect data (Rs indicate reverse-scored items):

- (1) I am willing to put in a great deal of effort beyond that normally expected in order to help this organization be successful.
- (2) I talk up this organization to my friends as a great organization to work for.
- (3) I feel very little loyalty to this organization (R).
- (4) I would accept almost any type of job assignment in order to keep working for this organization.
- (5) I find that my values and the organization's values are very similar.
- (6) I am proud to tell others that I am part of this organization.
- (7) I could just as well be working for a different organization as long as the type of work was similar (R).
- (8) This organization really inspires the very best in me in the way of job performance.
- (9) It would take very little change in my present circumstances to cause me to leave this organization (R).
- (10) I am extremely glad that I chose this organization to work for over others I was considering at the time I joined.
- (11) There's not too much to be gained by sticking with this organization indefinitely (R).

- (12) Often, I find it difficult to agree with this organizations policies on important matters relating to its employees (R).
- (13) I really care about the fate of this organization.
- (14) For me this is the best of all possible organizations for which to work.
- (15) Deciding to work for this organization was a definite mistake on my part (R).

The seven response categories were as follows: “strongly disagree, moderately disagree, slightly disagree, neither disagree nor agree, slightly agree, moderately agree, strongly agree”.

#### *Computation*

The response categories, as given above, were scored as one to seven, with one assigned to “strongly disagree” and seven assigned to “strongly agree”; these were, of course, reversed for the negatively stated items. The scores for all items were summed and divided by 15. Across the nine samples, the means range from 4.0 to 6.1, and the standard deviations range from 0.90 to 1.30.

#### *Validity*

Expressing concern over convergent validity, Mowday and Steers argue that the OCQ should be related to other measures designed to capture similar “affective” responses. Across six samples, the median  $r$  was 0.70 when the OCQ was correlated with the sources of organizational attachment (SOA) measure. The SOA is a 12-item measure of perceived influence of various aspects of the job, work environment, and organization on the individual’s desire to remain with or leave the organization. The correlations with a single intent-to-leave measure range from  $-0.31$  to  $-0.63$ . The correlations with motivational force to perform and intrinsic motivation range from 0.35 to 0.45. The correlations with central life interest (orientation to work and non-work activities) range from 0.39 to 0.43. Finally, the supervisor’s rating of the employee’s commitment correlates at 0.60 with the OCQ.

With regard to discriminant validity, Mowday and Steers argue that the OCQ should not be highly correlated with other attitudinal measures. Over four samples, the correlations with job involvement range from 0.39 to 0.56; the correlation with career satisfaction for two samples is 0.39 and 0.40; over five samples, the correlations with the job descriptive index (job satisfaction) range from 0.01 to 0.68, with a median of 0.41.

With respect to predictive validity, the authors argue – based on current theory – that the committed employees will be less likely to leave; across nine studies, eight correlations are significantly negative. Commitment is also found to be lowly negatively correlated with absenteeism, positively correlated with tenure, and positively correlated with job performance.

For six samples, item analysis was used to obtain the item correlations, which range from 0.36 to 0.72. Factor analysis with varimax rotations was

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conducted on the 15 items for each of six samples; the authors report that these generally result in single-factor solutions.

#### *Reliability*

Coefficient alphas range from 0.82 to 0.93, with a median of 0.90. Test-retest reliability coefficients were computed for two samples. Among psychiatric technicians, the correlations are 0.53, 0.63, and 0.75 for two-month, three-month, and four-month periods respectively. Among retail management trainees, the correlations are 0.72 for two months and 0.62 for three months.

#### *Comments*

Although Mowday and Steers do not explicitly refer to “loyalty” in their definition of commitment, their conceptualization is compatible to the handbook’s. A loyal employee is, for example, likely to be identified with and involved in the employing organization. This compatibility is not surprising, since the handbook’s definition is based on the work of Porter and his colleagues – especially Mowday and Steers. There is now a substantial critical literature about the OCQ (Angle and Perry, 1981; Ferris and Aranya, 1983; Mayer and Schoorman, 1992; Tetrick and Farkas, 1988). A consistent negative criticism in this literature is that the OCQ splits into two factors along the positive/negative axis. The literature, therefore, mostly recommends use of the nine positively-worded items. This recommendation is worrisome, since exclusive use of positive items may result in response-set bias. Much research, however, has used the nine-item version of the OCQ, but there is no summary of the psychometric properties of this abbreviated version. Widespread use of this abbreviated version suggests that it probably possesses acceptable psychometric properties.

#### *Source*

Mowday and Steers (1979).

### **Kalleberg *et al.* (1996)**

#### *Description*

The National Organizations Study (NOS) was described in the chapter on administrative intensity and this information need not be repeated. This selection from the NOS focuses on gender differences in organizational commitment and data are provided about employees and employers. Information about work position and commitment will be emphasized. The information about gender differences and employers is important, since it explores new ground in the study of commitment. However, the focus of the selection will be on data pertaining to the impact of work positions on employee commitment. This is because this data has the strongest theoretical foundation, since it is based on Lincoln and Kalleberg’s study (1990) of commitment in Japanese and American organizations. The Lincoln and Kalleberg study constitutes a major theoretical statement in research on commitment.

*Definition*

Commitment in the NOS is defined as willingness to devote effort to the organization, identification with the values of the organization, and seeking to maintain affiliation with the organization (p. 302). This definition of commitment is essentially the one proposed by Porter and his colleagues.

*Data collection*

Six questionnaire items were used to collect information about commitment. The six items were preceded by the following lead-in statement: "Please tell me how much you agree or disagree with the following statements. Would you say that you strongly agree, agree, disagree, or strongly disagree?" (p. 310). After the lead-in statement, the following six items were read to the respondent:

- (1) I am willing to work harder than I have to in order to help this organization succeed.
- (2) I feel very little loyalty to this organization (reverse coded).
- (3) I would take almost any job to keep working for this organization;
- (4) I find that my values and the organization's values are very similar.
- (5) I am proud to be working for this organization.
- (6) I would turn down another job for more pay in order to stay with this organization (p. 310).

Since data were collected by telephone interviews, the four responses were included in the lead-in statement.

Items one to five closely resemble Items 1, 3, 4, 5, and 6 respectively of the 15-item organizational commitment questionnaire (OCQ) of Mowday *et al.* (1982). Kalleberg and his colleagues believe their six items capture the "...major aspects of commitment measured by the OCQ..." (p. 310).

*Computation*

Except for the one reverse-coded item, responses were scored as follows: "strongly agree (4), agree (3), disagree (2), and strongly disagree (1)". The scores were summed and divided by six. The index has a mean of 2.79 and a standard deviation of 0.49. These statistics are unweighted, that is, they reflect the sample of individuals and not establishments.

*Validity*

Seven work-position determinants of commitment are postulated: position in authority hierarchy, job autonomy, perceived quality of workplace relations, presence of regular promotion procedures, non-merit reward criteria, workplace size, and self-employment. The first four determinants are believed to increase commitment, whereas the next two are believed to decrease it. No expectation existed for self-employment. With the exceptions of size and self-employment, these determinants come from Lincoln and Kalleberg (1990). Additional

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determinants were estimated regarding career experiences, compensation, and family affiliations. Two demographic controls, race and education, were also included in the regression analysis.

The data most pertinent to validity come from the work-position determinants, since, as previously indicated, this is where the theoretical foundation is the strongest, owing to its reliance on Lincoln and Kalleberg's study. Four of these work-position determinants are significant in the predicted direction (position in the authority hierarchy, job autonomy, presence of regular promotion procedures, and non-merit reward criteria). Perceived quality of workplace relations is not significant. Workplace size is not significant, but it is not based on Lincoln and Kalleberg's study. Self-employment is significant, but it also has no base in Lincoln and Kalleberg's study.

#### *Reliability*

The coefficient alpha for the six items is 0.74.

#### *Comments*

The NOS cannot be faulted for exploring gender differences in commitment among employers. This is important new information and needs to be examined. However, in most of the NOS, Kalleberg and his colleagues estimate established causal models in the field. Had this practice been followed in this instance, the focus would have been on the Lincoln and Kalleberg model. The theoretical foundation might have been somewhat strengthened by also drawing on the more comprehensive model of commitment estimated by Han and his colleagues (1995).

The heavy reliance on the conceptual and measurement work of Porter and his colleagues was a good idea and probably guarantees wide use of the measure in the study of commitment. It was probably a sensible strategy to improve the OCQ (Mowday *et al.*, 1982) rather than seek to develop a new measure, like Meyer and Allen. (Meyer and Allen's research will be discussed in the following selection.)

The six items had one reverse-coded item. Two or three reverse-coded items would have provided better protection against response-set bias. Kalleberg and his colleagues may have been deterred from using more reverse-coded items, since the OCQ, when factor analysed, often splits into two factors along the positive/negative axis. The positive and negative factors can still be combined, but it is cleaner to have a single factor.

The validity and reliability of the NOS measure is acceptable. Further research should subject the measure to a confirmatory factor analysis with other social psychological concepts, such as involvement and satisfaction. The work of Brooke and his colleagues (1988) indicates the type of further work needed. Given the nature of the NOS – a telephone interview with a senior executive – it will be difficult to obtain a test-retest estimate of reliability. Coefficient alpha will probably have to suffice.

*Sources*

In addition to Kalleberg *et al.* (1996), also relevant is Lincoln and Kalleberg (1990).

**Ko (1996)**

*Description*

This measurement study investigated Meyer and Allen's three-component view of organizational commitment in Seoul, South Korea. The sites for the study were two organizations, a research institute and the head office of an airline company. Each site was part of a different business conglomerate.

Sample 1 consisted of 278 respondents from the research institute; 77 per cent of the respondents are male. The mean levels of the respondents' age, education, and tenure are 29.7, 16.5 and 4.5 years respectively. Sample 2, from the airline company, was composed of 589 employees; 81.3 per cent of the respondents are male. The mean levels of the respondents' age, education, and tenure are 32.5, 15.2, and 7.3 years respectively. Both samples represented all occupational categories in the organizations.

*Definition*

As previously indicated, Meyer and Allen view commitment as having affective, continuance, and normative components. With affective commitment, an employee strongly identifies with, is involved in, and enjoys membership in the organization. Affective commitment corresponds to the view of commitment proposed by Porter and his colleagues. Continuance commitment is the tendency to engage in a consistent line of activity and is based on the work of Becker (1960). Normative commitment is based on the belief that an employee has an obligation to remain with the organization. Meyer and Allen offer no definition of commitment that includes the affective, continuance, and normative components.

*Data collection*

Meyer and Allen originally measured their three components with eight-item indices. However, they later developed (Meyer *et al.*, 1993) six-item measures for each of the three components; Ko's research used these six-item measures.

The measures for the affective commitment were as follows:

- (1) I would be very happy to spend the rest of my career with this organization (R).
- (2) I really feel as if this organization's problems are my own (R).
- (3) I do not feel a strong sense of "belonging" to my organization.
- (4) I do not feel "emotionally attached" to this organization.
- (5) I do not feel like "part of the family" at my organization.
- (6) This organization has a great deal of personal meaning for me (R).

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The measures used for continuance commitment were as follows:

Commitment

- (1) Right now, staying with my organization is a matter of necessity as much as desire (R).
- (2) It would be very hard for me to leave my organization right now, even if I wanted to (R).
- (3) Too much of my life would be disrupted if I decided to leave my organization now (R).
- (4) I feel that I have too few options to consider leaving this organization (R).
- (5) If I had not already put so much of myself into this organization, I might consider working elsewhere (R).
- (6) One of the few negative consequences of leaving this organization would be the scarcity of available alternatives (R).

**343**

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Normative commitment was measured by the six following items:

- (1) I do not feel any obligation to remain with my current employer.
- (2) Even if it were to my advantage, I do not feel it would be right to leave my organization now (R).
- (3) I would feel guilty if I left my organization now (R).
- (4) This organization deserves my loyalty (R).
- (5) I would not leave my organization right now because I have a sense of obligation to the people in it (R).
- (6) I owe a great deal to my organization (R).

Responses for these measures were made on a five-point scale: "strongly agree (1), agree (2), neither agree nor disagree (3), disagree (4), and strongly disagree (5)".

#### *Computation*

The five responses were scored from one to five, with strongly agree scored as one and strongly disagree scored as five. To obtain the total score for a respondent, the items are summed and divided by six. For the first sample, the means and standard deviations for the three components are as follows: affective commitment (3.21 and 0.78); continuance commitment (2.92 and 0.61); and normative commitment (2.94 and 0.69). Means and standard deviations for the second sample are as follows: affective commitment (2.98 and 0.82); continuance commitment (3.10 and 0.64); and normative commitment (2.81 and 0.68).

#### *Validity*

Consider first the issues of convergent and discriminant validity. The results of the confirmatory factor analysis provide support for the three-component view of commitment. However, the results are not consistent between the two samples and affective and normative commitment are highly correlated ( $r =$

0.73 in Sample 1 and 0.85 in Sample 2). The high correlation is most important, because it suggests that affective and normative commitment are not distinct concepts.

Consider next the question of construct validity. Based on a review of the literature, Ko developed causal models of the three components of commitment. The models are too complicated to be briefly summarized. If the results are consistent with the models, this will provide evidence demonstrating construct validity of the measures. Ko examined both the zero-order coefficients and the standardized coefficients; this selection will only focus on the standardized coefficients.

The results support the construct validity of affective commitment. With but one exception, all the significant standardized coefficients are consistent with the model. For continuance commitment, the results are not clear-cut. In Sample 1, three significant determinants have effects in the predicted direction, whereas one determinant does not. In Sample 2, two significant determinants are consistent with the model and one is not. The findings indicate that the construct validity of continuance commitment is problematic. The results also provide evidence for normative commitment. All the significant determinants, with one exception, are consistent with the model. In short, the construct validity of the measures of affective and normative commitment are confirmed, whereas the measures of continuance commitment are not confirmed.

#### *Reliability*

The coefficient alpha reliabilities for the three measures for the two samples are as follows: affective commitment (Sample 1 = 0.88; Sample 2 = 0.87); continuance commitment (Sample 1 = 0.58; Sample 2 = 0.64); and normative commitment (Sample 1 = 0.78; Sample 2 = 0.76). Since reliabilities below 0.70 are generally considered unacceptable, this means that the reliabilities for affective and normative commitment are acceptable, whereas those for continuance commitment are not.

#### *Comments*

Ko is to be applauded for his measurement study in South Korea. Since all of the research on Meyer and Allen's three-component view of commitment has been performed in the West, this type of comparative research subjects Meyer and Allen's view to a stringent test. More research like Ko's is needed.

Meyer and Allen offer no definition of commitment that embraces their three components. They thus do not propose a multidimensional view of commitment, but rather advance three different definitions of commitment. Later material in the handbook dealing with communication (Chapter 5) and satisfaction (Chapter 23) illustrates how different components of a concept can be captured by a more general formulation.

There is also a problem with the face validity of continuance commitment that Ko does not address. Continuance commitment is defined in terms of engaging in a consistent line of activity – yet all of its measures assess the costs



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of leaving an organization. These costs are determinants of continuance commitment rather than measures of consistency. This problem, plus the lack of construct validity and low reliability, suggest that the measures of continuance commitment need to be drastically revised.

Although normative commitment's measures demonstrate construct validity and acceptable reliability, its high correlation with affective commitment is worrisome. The scale of normative commitment should be revised to see if it can be clearly distinguished from affective commitment.

The handbook, therefore, recommends that Meyer and Allen's measure of affective commitment be used as an alternative to Porter *et al.*'s organizational commitment questionnaire (OCQ). It is not clear why a new scale was developed rather than seeking to improve the OCQ; however, the new scale was developed and is an acceptable alternative to the OCQ. Meyer and Allen's measures of continuance and normative commitment require considerable work before they are psychometrically acceptable.

A cautionary note is in order. There is a substantial amount of data (Allen and Meyer, 1990; Dunham *et al.*, 1994; Meyer and Allen, 1984, 1988, 1991; Meyer, *et al.* 1989, 1990, 1993; Shore *et al.*, 1995) that evaluates Meyer and Allen's view of commitment more favourably than the handbook and Ko's research. This substantial literature cannot be ignored and cautions against the handbook's and Ko's more negative evaluation. Meyer and Allen, doing what good scholars always do, have stimulated research and the last word has not been written regarding their important research.

#### *Sources*

In addition to Ko (1996), also relevant are Meyer and Allen (1984, 1988, 1991).

#### **Blau *et al.* (1993)**

##### *Description*

This research sought to develop a general scale of work commitment. Following Morrow (1983), five facets of work commitment are distinguished: value, career, job, organization, and union. The handbook is primarily interested in the career facet. Two studies were done, one of MBA students and another of nurses. The handbook focuses on the second study, since it is the one where the final measures were evaluated. Three hospitals in a large eastern city were this study's site. The 339 nurses in the study were all full-time employees in the hospitals.

##### *Definition*

The career facet is what Blau's previous research (1985, 1988, 1989) had termed "career commitment". In the present research, career is replaced by "occupation". However, occupation has the same meaning as career, defined as "the pattern of work-related experiences (including attitudes and behaviour) over the span of a person's life" (p. 311). Morrow's value facet corresponds to the handbook's work involvement, job facet is captured by job involvement, and the

organizational facet is equivalent to organizational commitment. The handbook has no measure of union commitment.

*Data collection*

Eleven questionnaire items were used to collect data about the occupational facet:

- (1) If could, would go into a different occupation.
- (2) Can see self in occupation for many years
- (3) Occupation choice is a good decision.
- (4) If could, would not choose occupation.
- (5) No money need, still continue in occupation.
- (6) Sometimes dissatisfied with occupation.
- (7) Like occupation too well to give up.
- (8) Education/training not for occupation.
- (9) Have ideal occupation for life work.
- (10) Wish chosen different occupation.
- (11) Disappointed that entered occupation (p. 30).

The following six-point response scale was used for the 11 items: "strongly disagree (1); moderately disagree (2); slightly disagree (3); slightly agree (4); moderately agree (5); and strongly agree (6)".

*Computation*

Each response was apparently scored one to six, as indicated in the discussion of data collection. The 11 responses were then summed for a total score. In the second study, the means and standard deviation are 40.3 and 8.2 respectively.

*Validity*

A confirmatory factor analysis for four of the work commitment facets – the union facet is excluded – indicates separate factors for the four facets. Blau argues that an acceptable fit of the data to the four a priori facets is found. The chi square to degrees of freedom ratio is 1.97, the goodness of fit is 0.92, the adjusted goodness of fit is 0.90, and the root means square residual is 0.06. All the factor loadings are significant. For the occupational facet, all the loadings are 0.49 or above.

*Reliability*

A coefficient alpha for the occupational facet is 0.76.

*Comments*

Blau *et al.*'s work-related experiences over the span of a person's life are more general than the handbook's occupational commitment. Work-related

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experiences could, for instance, refer to employment in very different occupations or fields of work. The handbook's view of occupational commitment as loyalty, though not without some ambiguity, seems preferable to Blau *et al.*'s work-related experiences.

Five comments are pertinent to the collection of data.

- (1) Blau *et al.*'s 11 questionnaire items have been condensed for journal presentation. It is unfortunate that editors press for this type of condensation, but the researcher can expand the items.
- (2) Positive and negative items are properly included to assess the occupational facet. However, it would be easier for the reader, with the scoring for example, had Blau *et al.* explicitly indicated the positive and negative items.
- (3) The sixth item ("sometimes dissatisfied") seems problematical, but its loading of 0.71 is good – thus there may be no problem here.
- (4) No lead-in for the 11 items is provided. Such lead-ins are customary, because they help the reader complete the questionnaire.
- (5) 11 items will be too long for many researchers, especially those estimating causal models. However, scales of this type can usually be shortened without too much loss of measurement quality.

The provision of a mean and standard deviation is helpful. However, the scoring should have been more fully described.

The confirmatory factor analysis is excellent, especially since it is based on measures widely used in the field. However, more comprehensive assessments of validity are needed. This will not be easy, since there are no established causal models regarding the determinants of occupational commitment. The reliability is acceptable, but other assessments, such as test/retest, are needed. All in all, however, Blau *et al.*'s measures possess good psychometric properties – a result which is achieved by Blau's sustained concern with this line of research. Would that more researchers could follow Blau's example.

#### Sources

In addition to Blau *et al.* (1993), Blau's previously cited work on career commitment is also relevant.

#### Notes

1. This view of commitment is based on the work of Porter *et al.* (Mowday *et al.*, 1982, pp. 26-8). Although not explicitly defining organizational commitment as loyalty, Porter *et al.* use the term in their discussion (see, for example, Mowday *et al.*, 1982, p. 19). Loyalty is very compatible with Porter *et al.*'s explicit definition. A loyal employee, for instance, will be one that identifies with and is involved in his/her organization (Mowday and Steers, 1979, p. 226).
2. These remarks, it should be emphasized, also apply to *behavioural* commitment. The referent for behavioural commitment is *intent* to behave in some way – such as leaving the employment of an organization – rather than the behavioural act of leaving. Behavioural

commitment is a somewhat misleading label. See Bluedorn (1982) for additional material on intent to leave.

3. In defining commitment subjectively, the handbook has adopted conventional usage in the field. It might be fruitful to investigate commitment defined in behavioural terms. With such a definition, for instance, commitment could be viewed as collectivity-oriented *behaviour* by an employee. A collectivity-oriented employee would place the welfare of the organization ahead of his/her own welfare. Commitment viewed as collectivity-oriented behaviour might be related to more determinants and consequences than the conventional subjective definition.
4. Involvement and satisfaction are discussed later in the handbook, in Chapters 16 and 23, respectively. There is considerable evidence in the literature supporting the handbook's conceptual differentiation of commitment, involvement, and satisfaction (Brooke *et al.*, 1988; Mathieu and Farr, 1991).
5. This material on cosmopolitans and locals is based on the review of the literature and empirical study by Flango and Brumbaugh (1974).
6. See Dunham *et al.* (1994) for a review of much of this literature.

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## 5. Communication

### Definition

Communication is the degree to which information is transmitted among the members of an organization[1]. This transmission of information assumes many forms: formal discussions between superordinates and subordinates, informal conferences among subordinates, publication of various types of newsletters, production of radio and television programmes, posting of announcements on bulletin boards, the use of public address systems, and so forth. Socialization, feedback, acculturation, assimilation, diffusion, indoctrination, and education are some of the many labels under which communication is discussed.

Four dimensions of communication are found in the literature. The first, and probably the most common distinction, is between formal and informal communication. The basis of this distinction is whether the information is transmitted officially or unofficially. Formal communication refers to officially transmitted information. The sanctions at the disposal of the organization – its wealth and prestige, for example – are used to support the system of formal communication. The system of informal communication receives no such support. Second, vertical and horizontal communication are commonly distinguished. Vertical communication refers to the transmission of information in superordinate-subordinate relationships, whether from superordinate to subordinate or from subordinate to superordinate. Horizontal communication refers to transmission of information among peers. Third, personal and impersonal communication, while not discussed explicitly in organizational literature as often as the two previous distinctions, is implicit in much of the literature. The basis of this distinction is whether or not the information is transmitted in situations where mutual influence is possible. Personal conversations and telephone calls are examples of personal communication, whereas the mass media is an example of impersonal communication. Fourth, instrumental and expressive communication may be distinguished. The transmission of information necessary to do a job is instrumental communication, whereas expressive communication is the residual category of non-job information. Like personal and impersonal communication, the meaning of instrumental and expressive communication is usually implicit in the literature. Both terms identify significant components of communication, however, and they should be explicitly distinguished.

It is common in organizational research to dimensionalize concepts. Absenteeism, for instance, is dimensionalized into voluntary and involuntary components. A critical requirement for dimensionalization is that the components be less general than the original concept. Voluntary and involuntary absenteeism, for example, are less general than absenteeism. The components of communication meet this critical requirement, since the four dimensions are less general than communications. Many times, however, this

critical requirement is not met. In the chapter dealing with commitment, Meyer and Allen present what they term a multidimensional view of commitment; they distinguish affective, continuance, and normative dimensions. The problem is that Meyer and Allen do not present a general concept of commitment which includes the three components. They have presented three different definitions of commitment rather than three components of commitment. What Meyer and Allen do is common in the organizational literature and will be repeatedly noted in the handbook.

### **Measurement**

Communication is one of the most commonly treated topics in the organizational literature. Not only do all the textbooks allocate a sizable amount of space to its discussion but it is also a key feature of major empirical studies. Popular literature is also enamoured with the possibility of communication as a panacea for whatever ails an organization. If one is to judge by the amount of space allocated, communication is one of the most significant topics in the organizational literature.

The measurement of communication is a neglected topic, however. Despite this neglect, the measure proposed by Penley and Hawkins (1985) has promise and is the selection used to illustrate the measurement of communication.

### **Penley and Hawkins (1985)**

#### *Description*

The purpose of this research was to extend organizational communication research by specifying dimensions of communication and by investigating the relationship between communication and leadership. Since leadership is not a critical focus of the handbook, this material will be excluded. The first study (of two) considers the dimensions of communication and will be examined.

The first study examined the personnel and support services division of a large, southern insurance company. This division had 600 employees, 25 per cent of whom were randomly selected for the study. Of the 150 employees, 122 voluntarily agreed to take part in the study, for an 81 per cent participation rate. Of the subjects, 64 per cent are not supervisors, about 50 per cent had completed less than two years of college, 41 per cent are members of minority groups, and 51 per cent are female. The mean age of the respondents is 38.

#### *Definition*

Though Penley and Hawkins discuss dimensions and measurement of communication, they do not offer a general definition.

Five dimensions of communication are distinguished.

- (1) Task communication includes items that measure the extent to which supervisors let subordinates know what needs to be done, describes changes in the workplace, and indicates policy.

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- (2) Performance communication contains items that assess the degree to which supervisors transmit information about the quality of the subordinates' work.
  - (3) Career communication has items that measure the extent to which the supervisors review training opportunities with subordinates and provide them with career advice.
  - (4) Communication responsiveness deals with the degree to which supervisors listen to subordinates and respond to issues raised by them.
  - (5) Personal communication examines the extent to which family and non-work-related interests are discussed in the supervisor-subordinate relationship.

*Data collection*

The following 19 questionnaire items were used to collect data about the five dimensions of communication. Task communication was assessed by four questions:

- (1) My supervisor clearly explains policy changes.
- (2) My supervisor lets us know about changes which are coming up.
- (3) My supervisor lets me know what work needs to be done.
- (4) My supervisor discusses with me how to handle problems in my work.

Three questions were used to gauge performance communication:

- (5) My supervisor lets me know which areas of my performance are weak.
- (6) My supervisor lets me know how I can do better in my work.
- (7) My supervisor lets me know about the quality of my work.

Data about career communication was collected by five items:

- (8) My supervisor encourages me to develop my career.
- (9) My supervisor discusses with me how to get additional training.
- (10) My supervisor gives me advice on developing my career.
- (11) My supervisor makes me aware of the demands of future jobs in my career path.
- (12) My supervisor gives me information on training opportunities.

Communication responsiveness was assessed by four items:

- (13) If I have a problem, my supervisor is willing to listen.
- (14) When I ask a question, my supervisor does his/her best to get me an answer.
- (15) If I make a request of my supervisor, I can depend on getting a response.

- (16) My supervisor takes the time to listen to what I have to say.  
Three items collected data about personal communication:  
(17) My supervisor asks about my family.  
(18) My supervisor talks about his/her non-work-related interests and activities.  
(19) My supervisor asks about my interests outside work.

No lead-in was provided for the 19 questionnaire items. Responses were measured by a six-point Likert scale, anchored by “strongly disagree” and “strongly agree.” The four intermediate responses were not provided.

#### *Computation*

The responses to the items were summed for each of the five dimensions. Items were apparently scored on the six-point Likert scale. Judging from the means provided for the second study, the summed scores were apparently divided by six to obtain an average score for each dimension. The exact scoring is also not provided – whether, for example, the scores run from one to six or from zero to five. The mean and standard deviation are not provided.

#### *Validity*

A factor analysis was performed for the 19 factors and yielded the expected five factors. The loadings – with two exceptions, 0.31 and 0.45 for task communication – are all 0.50 or above. Outside the five factors, the loadings are all below 0.30, with the exception of communication responsiveness, with loadings of 0.33 and 0.49. The results of the factor analysis for the two samples are quite similar, with congruency coefficients above 0.86 for four of the five dimensions; the coefficient for task communication is 0.35.

#### *Reliability*

Coefficient alphas for the five dimensions are as follows: task communication (0.87), performance communication (0.88), career communication (0.92), communication responsiveness (0.95), and personal communication (0.74).

#### *Comments*

Although no explicit definition of communication is provided, the implicit definition, judging from the 19 items, is consistent with the handbook’s “transmission of information”. Communication should have been explicitly defined.

The five dimensions are quite different from the ones the handbook abstracted from the literature[2]. Task communication is similar to the handbook’s instrumental communication. No mention is made of expressive communication. Performance and career communication have no equivalents among the handbook’s dimensions. Communication responsiveness is tapping an aspect of vertical communication. Since the focus of the 19 items is on the



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superordinate-subordinate relationship, no mention is made of horizontal communication.

Had a lead-in statement been provided, it could have clarified the meaning of “supervisor”. Supervisor probably means the immediate superior who evaluates the subordinate, but this point is not clear in the research’s report.

All six of the Likert responses should have been provided. The 19 items were graciously provided to the handbook by Professor Penley. It is unfortunate that such items cannot be included in journal articles. Editorial pressure to exclude the items is too great. Such exclusion hinders replication, since not all researchers are as co-operative as Penley.

The scoring should have been clearly specified and means and standard deviations provided. Inclusion of means and standard deviations is now fairly routine in most research reports. When the 1972 measurement handbook was published, such inclusion was not routine.

Task communication appears to overlap with the role ambiguity components of stress, a concept to be discussed later (Chapter 26) in the handbook. This redundancy is a problem that future research must resolve.

The 19 items measure a great deal that is important about organizational communication. Penley and Hawkins’ strategy is probably a good one, since other forms of communication are probably correlated with superordinate-subordinate communication. These other forms of communication should eventually be assessed, however. Superordinate-subordinate communication, for example, excludes the important communication among peers. Or again, only interpersonal communication is tapped by the 19 items. Organizations commonly use a vast array of impersonal communication to transmit information to their employees. Note impersonal communication as one of the handbook’s dimensions. Penley and Hawkins have made a good beginning – their items possess acceptable validity and reliability – but much work remains to be done.

*Source*

Penley and Hawkins (1985).

**Notes**

1. This definition of communication is based on Tannenbaum (1968, p. 19) and Hall (1982, p. 185).
2. The handbook’s dimensions present four mutually exclusive ways to categorize organizational communication, whereas Penley and Hawkins’ five dimensions are intended to explore all critical elements in the communication between superordinates and subordinates. It could, therefore, be anticipated that the two sets of dimensions would be quite different.

## 6. Conflict regulation

### **Definition**

Conflict is the struggle for scarce organizational resources[1]. Widely-documented examples of conflict in American society are union-management relations and relationships among the military services. Management seeks to limit the amount of its resources allocated to wages, and the union presses for ever more wages for its members. Each military branch seeks to maximize its share of the defence budget, with the Secretary of Defence, the President, and the Congress ultimately deciding on the final allocation. These examples of conflict are not either-or situations where one party wins and the other loses, as in an election or a sporting event. Rather, each of the parties obtains differing amounts of a relatively limited resource. The resource base can increase or decrease – it is not fixed – but practically speaking, at any one time it is limited.

It also is important to note what conflict does not mean. Different role expectations, cultural discrepancies, and interpersonal dislike are all excluded by the handbook's definition of conflict. These are important topics of research and are commonly labelled "conflict" in much of the organizational literature[2]. The handbook, however, limits conflict to the struggle for scarce organizational resources. The excluded factors may or may not be involved in conflict; they should be examined to the extent that they are involved.

The intensity of conflict is often distinguished (Dahrendorf, 1958, p. 211). Intensity is the degree of engagement of the parties in a conflict situation. When the conflict totally or almost totally absorbs the time and energy of the parties, such as the major players in an election campaign, the conflict is characterized by high intensity. Much organizational conflict, between superordinates and subordinates for instance, is usually a low intensity affair. The greater the intensity of conflict in an organization, the greater the necessity for the regulation of conflict – if a high degree of effectiveness is to be maintained. Violence is more likely to characterize high rather than low-intensity conflict.

Conflict regulation is the extent to which conflict is controlled[3]. When conflict is well regulated, organizational effectiveness[4] is not adversely influenced by the struggle for scarce resources. If conflict is not well regulated, organizational effectiveness can be drastically and negatively affected. One classic way to regulate conflict is to institutionalize it, that is, to subject the conflict to a set of norms (Dahrendorf, 1958, pp. 64-7)[5]. Labour law in labour-management relations in the USA is an example of institutionalized conflict. The "rules of the game" in sporting events is another example of institutionalization.

### **Measurement**

Conflict has not traditionally been a major subject of study among organizational scholars. Scholars have been aware of conflict and the extent of its regulation, but it has not been as carefully examined as have, for example,

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involvement and satisfaction[6], which have been major preoccupations of many organizational scholars. Recently, however, there have been major organizational studies concerned with conflict (Burawoy, 1979; Edwards, 1979)[7]. None of these studies, however, has proposed measures of conflict regulation. The National Organizations Study (NOS), selections from which were used for administrative intensity and commitment, has a measure of "dispute regulation procedures" which can serve to assess conflict regulation, and it is the NOS which is the selection for this chapter.

**Kalleberg *et al.* (1996)***Description*

The National Organizations Study (NOS) was first described in the discussion of administrative intensity, and this information need not be repeated.

*Definition*

Dispute resolution procedures are "...formal channels through which workplace disputes can be aired and resolved..." (p. 88). "Due process" is another NOS term used to characterize dispute resolution. Lincoln and Kalleberg (1990, pp. 13-16) discuss dispute resolution procedures as two key dimensions of "corporatist organization".

*Data collection*

The informant for each establishment was asked to say whether there were "formal procedures for resolving disputes between employees and their supervisors or coworkers" (p. 95). Since this item could not be located on the interview schedule, it is not clear whether a lead-in was provided and what the exact responses were which could be made to the question. Judging from the percentage results provided, the respondents could apparently answer "yes" or "no" to the question.

*Computation*

The unweighted percentage for the 675 establishments providing responses is 68. About two thirds of the US workforce in 1991, therefore, had access to such formal procedures. The percentage was lower in the weighted sample; it is estimated that formal dispute resolution procedures were present in about 18 per cent of US work establishments. From the earlier discussion of the NOS, it may be recalled that the unweighted percentages refer to samples of individuals, whereas the weighted percentages refer to samples of establishments.

*Validity*

The multivariate analysis (pp. 104-6) indicates that dispute resolution procedures are positively correlated with size, formalization, being a public organization, being a non-profit organization, having union pressure, and being located at different sites. Many departments in an organization also serve to

reduce the likelihood of having dispute resolution procedures. These results agree with existing theory.

*Reliability*

No information is presented about reliability.

**356**

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*Comments*

The NOS is a welcome addition to the literature, since there are not many empirical studies dealing with dispute resolution procedures. In 1986, the author of the handbook could locate no empirical studies of conflict which had measures worthy of inclusion. There were many discussions of conflict – some of which were indicated previously – but few valid and reliable measures were provided. The NOS indicates that the situation for conflict is improving.

Dispute resolution procedures are a standard way for organizations to regulate conflict. These procedures are often termed “grievance procedures” and “due process”. The handbook’s view of conflict regulation is thus quite compatible with the NOS’s dispute resolution procedures.

A long-run conceptual issue should be faced. The existence or non-existence of dispute resolution procedures is a crude way to access conflict regulation. An organization with an elaborate and sophisticated procedure would respond in the affirmative to the question. But so also would an organization with a simple and unsophisticated procedure. Assessment should ultimately explore the quality of the dispute resolution procedure. The NOS could not do everything and has made a good beginning in this area.

Three observations are pertinent about data collection. First, the exact item should have been included in the interview schedule. Researchers should not have to guess at lead-ins and the responses provided. Second, the question does not distinguish dispute resolution procedures between employers and their supervisors and between employees. Both types of procedures are included in the same question. The general rule is that each questionnaire or interview item should request information about a single topic. Third, single measures should be avoided. It would have been a fairly simple matter to have asked about dispute resolution procedures operating between employees and their supervisors, and also between employees, thereby providing two questions instead of one.

It is helpful that both unweighted and weighted percentages are provided. This type of assistance is typical of the NOS.

The single item appears to have face validity, since it yields results that are consistent with theoretical expectations. However, a more comprehensive evaluation of validity is needed. With more interview items, for example, a confirmatory factor analysis can be done.

Test-retest coefficients are difficult to provide with this type of study. However, with more interview items a coefficient alpha could have been computed.

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*Source*  
Kalleberg *et al.* (1996).

Conflict  
regulation

**Notes**

1. This definition is based on Coser (1956, p. 8) and Dahrendorf (1958, p. 209).
2. Different role expectations, typically referred to as “role conflict”, is an especially important topic of research. The handbook treats role conflict in Chapter 26, dealing with stress.
3. Dahrendorf (1958, pp. 64-7) is the basis for this definition. Pertinent material is also found in Bacharach and Lawler (1980, 1981) and Selznick (1969).
4. Effectiveness is treated in Chapter 9 of this handbook.
5. Durkheim (1947) is the source of material about institutionalization in sociology.
6. Involvement and satisfaction are treated in Chapters 16 and 23 respectively in this handbook.
7. Marxists, to their credit, have provided a substantial amount of this literature about conflict. Burawoy (1979) and Edwards (1979) are major Marxist scholars working in the area of organizational studies. Marxist scholars generally do not estimate explicit causal models nor spend a substantial amount of time constructing valid and reliable measures.

## 7. Co-ordination

### **Definition**

Co-ordination is the degree to which the subunits of an organization operate according to the requirements of each other and of the total organization[1]. If a business firm, for instance, has manufacturing, marketing, accounting, and research subunits, co-ordination is high if these subunits work smoothly together to maximize the firm's profitability. Low co-ordination exists when the subunits refuse to communicate with each other or resist compromises in the interests of the firm. Material related to the concept of co-ordination is also found in discussions of integration and coupling[2].

### **Measurement**

Co-ordination is often discussed but seldom measured. The concept, for instance, is important in Blau and Schoenherr's work on the determinants of administrative intensity (1971, pp. 297-329). In particular, they hypothesized that complexity would increase administrative intensity, because it results in problems with communication and co-ordination. Blau and Schoenherr carefully defined and measured complexity and administrative intensity; co-ordination, however, was neither defined nor measured[3]. A notable exception to the lack of measurement work on co-ordination is Georgopoulos and Mann's (1962) study of community general hospitals, which is the most theoretically and methodologically sophisticated treatment of co-ordination in the literature.

Georgopoulos and Mann's study is the first selection in the handbook from the Survey Research Center (SRC) of the University of Michigan. The SRC has done more quality organizational research than any other research unit in the world. Their research began in the 1940s and has continued to the present. Like the Bell laboratories of American Telephone and Telegraph, the SRC is a national treasure, especially for organizational scholars.

### **Georgopoulos and Mann (1962)**

#### *Description*

This study investigated the determinants of organizational effectiveness by studying ten community general hospitals. The following sample of respondents was used to collect information about co-ordination: non-medical department heads, the hospital administrator, supervisory/non-supervisory registered nurses, medical staff members with and without administrative responsibilities, X-ray technicians, and laboratory technicians. Two units of analysis were used, the hospital and the department of nursing. The handbook uses only the former unit for the measurement of co-ordination.

#### *Definition*

Georgopoulos and Mann define co-ordination as "the extent to which the various interdependent parts of an organization function each according to the

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needs and requirements of the other parts and of the total system” (p. 273). The researchers distinguished four major types of co-ordination – corrective, preventive, regulatory, and promotive – and two broad classes of co-ordination, programmed and general.

#### *Data collection*

The data for the measurement of co-ordination were collected by questionnaire, with two sets of questions used. First, seven questions were used to obtain information about the four major types and two general classes of co-ordination (pp. 280-1). Second, two questions were used to obtain data about the reliability of the first set of seven questions (pp. 290-1). The first set of seven questions was as follows:

- (1) How well do the different job and work activities around the patient fit together, or how well are all things geared in the direction of giving good patient care?
- (2) To what extent do the people from the various inter-related departments make an effort to avoid creating problems or interference with each other’s duties and responsibilities?
- (3) To what extent do people from different departments who have to work together do their job properly and efficiently without getting in each other’s way?
- (4) In general, how do the patients feel about how smoothly the various personnel around them work together?
- (5) To what extent are all related things and activities well timed in the everyday routine of the hospital?
- (6) How well planned are the work assignments of the people from the different departments who work together?
- (7) In general, how well established are the routines of the different departments that have to work with one another?

There was a “check one”, enclosed by parentheses, following each of the seven questions.

The responses for the seven questions were as follows:

- (1) Perfectly, very well, fairly well, not so well, not at all.
- (2) To a very great extent, to a great extent, to a fair extent, to a small extent, to a very small extent.
- (3-4) The patients feel that the personnel work together completely smoothly, the patients feel that the personnel work together very smoothly, the patients feel that the personnel work together fairly smoothly, the patients feel that the personnel do not work together smoothly, and the patients feel that the personnel do not work together smoothly at all.

- (5) All related things and activities in the everyday routine are perfectly timed, they are very well timed, they are fairly well timed, they are not so well timed, and they are rather poorly timed.
- (6) Extremely well planned, very well planned, fairly well planned, not so well planned, not well planned at all.
- (7) Their routines are extremely well established, very well established, fairly well established, not too well established, their routines are not well established.

Two questions were used to evaluate reliability:

- (1) In your opinion, to what extent has this hospital been able to achieve *singleness of direction* in the efforts of its many groups, departments, and individuals?
- (2) In this hospital, how well organized or tied together are the efforts of its many groups and individuals towards providing the best possible patient care?

Each of the two questions is followed by a "check one", enclosed by parentheses.

The following response categories were used for the first question: "to a very great extent, to a considerable extent, to a fair extent, to a small extent, and to a very small extent". For the second question, the following responses were used: "perfectly, very well, fairly well, not so well, not at all well".

#### *Computation*

Three sets of computations, each with different steps, were performed. First, for each of the seven questions and for each hospital in the study, the following steps were taken:

- The responses were scored from one to five, with the lower score indicating greater co-ordination.
- Mean scores for each group of respondents on each item were obtained and weighted with a sampling ratio interval.
- Means for individual hospitals were computed for each of the seven questions.
- Each hospital was rank-ordered according to its score on each of the seven means.

Second, four overall measures of co-ordination were derived from the first set of calculations:

- *Mean rank*. Each of the ten hospitals had a rank for each of the seven questions. A mean of these seven ranks was computed to obtain the first overall measure of co-ordination.



- *Mean score.* Each of the ten hospitals had a mean for each of the seven questions. A mean of these seven means was computed to yield the second overall measure of co-ordination.
- *Mean score (general co-ordination).* The third overall measure was also based on a mean of the means. Only the means for the first four questions were used, however.
- *Mean score (programmed co-ordination).* The fourth overall measure was a mean of the means, but involved only the means for the last three questions.

Third, the last set of computations relates to the two questions used to evaluate reliability. These two questions were scored like the first seven. The means for the first of the two questions range from 2.06 to 2.68; the means for the second question range from 1.60 to 2.68 (pp. 290-2).

#### *Validity*

Georgopoulos and Mann present six sets of determinants of co-ordination and offered the following summary of results concerning their predictions regarding these determinants: "...nearly all of our initial hypotheses as to the...determinants of organizational co-ordination received strong empirical support from the data..." (p. 342). These results thus support the construct validity of the measures of co-ordination.

#### *Reliability*

Georgopoulos and Mann present four sets of data pertinent to the reliability of their measures (pp. 284-93). First, there are rank-order correlations among the seven questions used to collect data about the four major types and two general classes of co-ordination. The seven questions are positively correlated, and 15 of the 21 correlations are statistically significant. Second, the hospitals were rank-ordered according to their scores on each of the four overall measures of co-ordination. The four measures are highly correlated; the rank-order correlation between any two of the four measures is 0.90 or higher, which is statistically significant beyond the 0.01 level. Third, there are rank-order correlations between the four overall measures of co-ordination and their component items. Each of the four overall measures correlates positively and significantly with all of its components. Fourth, the two questions designed exclusively for the measure of reliability are correlated with the seven questions and the four overall measures. The seven questions are those designed to measure the four major types and two general classes of co-ordination. The results show that singleness of direction (the first reliability question) is positively and significantly related to the seven questions and the four overall measures; all 11 correlations are statistically significant at the 0.05 level or better. The results for the second reliability question are similar to those obtained for the first. Questions designed to collect data about the types and classes of co-ordination (the seven questions) correlate positively with how well the efforts of hospital

members and groups are tied together towards providing the best possible patient care, the second reliability question. The coefficients range from 0.43 to 0.70, and five of the coefficients are significant beyond the 0.05 level. The four overall measures of co-ordination correlate 0.72, 0.75, 0.81, and 0.62, respectively, with the second reliability question. All of these correlations are statistically significant at better than the 0.05 level.

*Comments*

Two conceptual points are relevant. First, since this handbook uses Georgopoulos and Mann's definition of co-ordination, there is no problem of consistency in definitions. Second, these researchers should be applauded for grappling with the issue of the dimensions of co-ordination, since there has been little concern with this topic in the literature. It is difficult, however, to see how "types" and "classes" are different; they seem to be two terms for the idea of dimensions. What is needed is a series of dimensions for co-ordination. Georgopoulos and Mann have raised the issue of dimensionality, but have confused the discussion with types and classes.

Four comments are pertinent about the questionnaire items. First, three of Georgopoulos and Mann's seven questions (one, four, and five) refer either to patients or to hospitals and will naturally have to be modified to be used in other types of organizations. Second, the fourth question asks the respondents to report on the feelings of the patients. It would seem better to ask the respondents to report only about their views; accurate reporting of the patients' views is problematical. Third, the researchers present only one form of the questionnaire in their Appendix. While this certainly saves space, it does mean that some questions are excluded. An example is the question regarding co-ordination, which was presented only to supervisory nurses. Fourth, there appear to be two issues identified in the first of the seven items in the scale and the second question used to check reliability: fitting together of different jobs and activities and gearing towards good patient care. The traditional advice here is to restrict each question to a single thought.

Four comments about the calculations are relevant. First, Georgopoulos and Mann scored their items in such a way that a low score indicates high co-ordination. It is customary to use low scores to indicate low amounts of a variable; this custom should be maintained to promote standardization. Second, the researchers weighted the responses to the seven questions about the types and classes of co-ordination according to "sampling ratio intervals" (p. 283). It is not clear from their description how this weighting is accomplished. Third, no rationale is presented for using the first four questions and the last three questions for the third and fourth overall measures of co-ordination respectively. Why not, for instance, the first three and the last four? The measures do appear to have adequate validity and reliability. The researchers are to be especially applauded for their careful concern with reliability.

The handbook can find in the literature only one use, and this but a partial use (Lyons, 1968, pp. 46-9), of Georgopoulos and Mann's excellent measures. Part

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of this neglect is due to the lack of concern with co-ordination among organizational scholars; the concept does not have the appeal of commitment, involvement, or satisfaction. Some of the neglect, however, may be the result of the complicated nature of the work. For example, the handbook has alluded to the four major types and two general classes as instances of undue complication. Weighting with the sampling ratio is another instance. Measures, no matter how valid and reliable, will probably not be widely used unless they are relatively simple. Complicated measures may be used by colleagues and students, but this type of use is too limited to establish a measure in the field. The author of the handbook has searched for a simple and psychometrically sound measure of co-ordination, but none has yet been found.

*Source*

Georgopoulos and Mann (1962).

**Notes**

1. This definition of co-ordination comes basically from Georgopoulos and Mann (1962, p. 273).
2. The term "integration" comes from the work of Lawrence and Lorsch (1967) who have done major work in the area of co-ordination. Some of their earliest work is cited in Price (1972b, p. 89). "Coupling" is identified with the work of Weick (1976). See also the work of Perrow (1984).
3. Blau and Schoenherr (1971) also did not define and measure communication.

## 8. Departmentalization

### Definition

Departmentalization is the manner in which work is subdivided in an organization[1]. The classic subdivisions are by function and product. Consider, for instance, an organization that produces three products (A, B, and C) and carries on manufacturing, marketing, and research. With a functional subdivision of work, subunits with similar *inputs* are grouped together. In this instance, three subunits would be differentiated: manufacturing, marketing, and research. Each subunit contributes similar inputs to the organization. With a product subdivision of work, subunits with similar *outputs* are grouped together – products A, B, and C, in this instance. Each subunit would be organized around a different product.

Work can also be subdivided by geography. With a geographical subdivision of work, an area will commonly have the same combination of inputs and outputs as the entire organization. In the previous illustration, the organization may have an eastern and western region, with each region carrying on manufacturing, marketing, and research activities for three products. Data illustrating product departmentalization are discussed under a number of different labels: multidivisional form, multidivisional structures, M-Form, and divisionalization.

Most large business organizations in US society departmentalize by product (Daft, 1983, p. 226). This type of subdivision results in relatively self-contained units that can be treated as profit centres, thereby enhancing organizational control. Geographical departmentalization also results in relatively self-contained units. Subdivision of work by area is relatively rare among large US business organizations. Examples of geographical departmentalization, however, can be found among large multinational organizations, who frequently treat their overseas operations as regional units. Historically, functional departmentalization has been the preferred subdivision among US business organizations. Chandler's classic study (1962) describes the change from functional subdivision to product subdivision among 70 large business organizations from 1909 to 1959.

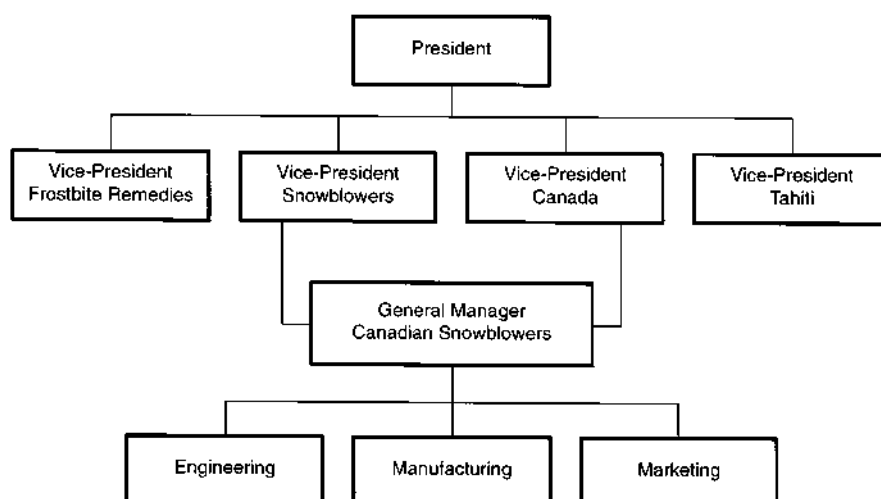
Organizations are often not totally departmentalized by function, product, or geography. An organization with a basically functional subdivision of work may have one or more product subunits; similarly, a basically product type of subdivision may have functional subunits, often in the central headquarters. The handbook thus treats function, product, and geography as separate categories, but assigns organizations to the categories, when it is necessary, by *primacy* of work subdivision. If most of an organization's employees, for example, are assigned to functional departments, then the organization is said to have a functional structure. Number of employees is, of course, only one way to determine primacy; percentage of organizational expenditures is another.

Whichever way is used, it must be recognized that organizations are rarely structured totally by function, product, or geography.

Different levels of an organization may also departmentalize differently. A product subunit may, for instance, have functional groupings. Similarly, a geographic subunit may have product groupings. When referring to departmentalization, the reference of this handbook is always to the first subdivision of work within an organization. For instance, an organization subdivided by products that, in turn, are subdivided by function, is classified as having a product type of departmentalization.

Mention should also be made of matrix structures[2]. Teece (1981) defines a matrix structure as “an overlapping divisionalized/functionally organized form” (p. 192). By “divisionalized form” Teece is referring to the handbook’s product departmentalization. Without offering a general definition, Mintzberg (1979) distinguishes two types of matrix structures, permanent and shifting (pp. 171-2). The permanent structure is the critical type, since it illustrates the key feature of a matrix structure. Figure 1 is Mintzberg’s example of a permanent matrix structure (p. 172).

From the perspective of the handbook, Mintzberg’s permanent matrix structure has two types of departmentalization, product and geography. It is the first subdivision of work that is critical – the level immediately below the president in Figure 1. The work of this organization is organized by product (frostbite remedies and snowblowers) and geography (Canada and Tahiti). As previously indicated, the primary type of departmentalization can be determined by which unit has the most employees. The general manager of Canadian Snowblowers, who has two supervisors (one for snowblowers and one for Canada), is supervising a functional type of departmentalization (engineering, manufacturing, and marketing). Matrix structures, therefore, do



**Figure 1.**  
A permanent matrix  
structure in an  
international firm

not constitute a separate type of departmentalization; they mostly refer to the allocation of power within organizations. The subdivision of work and the allocation of power are two different features of an organization's structure.

Departmentalization is a common concern among scholars who study business organizations[3]. The concept, however, is a general one. The colleges of a university, for example, represent a product subdivision of work. Voluntary, short-term, general hospitals commonly subdivide their work functionally, according to the traditional medical specialties. Government agencies in the USA are mostly departmentalized by geography, their subunits often representing states and counties. The Roman Catholic Church basically subdivides its work geographically, by diocese; the Curia in Rome, however, represents major functional subunits. The religious orders – Jesuits, Benedictines, Franciscans, and so forth – are examples of product subunits within the Roman Catholic Church. Scholars interested in departmentalization, therefore, should not restrict their concern to business organizations. When applied outside business organizations, such as churches, the terms may sometimes seem to be inappropriate, but the classification system can operate successfully.

The history of departmentalization is instructive. Although not using the label of departmentalization, early organizational scholars, such as Gulick and Urwick (1937), referred to work subdivision by purpose, process, clientele, and area. Simon (1950, pp. 28-35) critiqued this early organizational approach for its ambiguity[4]. Perhaps as the result of Simon's critique, the concept was not used very much by organizational scholars during the 1950s. In his classic *Strategy and Structure*, Chandler (1962) used the concept, but not the label, as a key feature of his work. As previously indicated, he referred to functional and product types of work subdivision. Based on research performed in the 1950s, Price (1968b) referred to the concept as "departmentalization". The concept is now a standard feature of organizational analysis (Armour and Teece, 1978; Mintzberg, 1979; Williamson and Bhargava, 1972). The history of departmentalization indicates that concepts which have important consequences for organizational operations will persist, even if they were ambiguous when first formulated. Departmentalization, however, is still not well established as the label for the concept. The handbook would like to use departmentalization as the label for the concept.

### **Measurement**

Most data collection in the study of organizations is by surveys and questionnaires. To expand this range, the handbook emphasizes the need for the use of records. There is no need for this emphasis in research on departmentalization, since this research only uses records. The selection for this chapter (Fligstein, 1985) illustrates the use of records in the study of departmentalization.

**Fligstein (1985)***Description*

The purpose of this study was to explain the spread of the multidivisional form, what the handbook has termed the product type of departmentalization. This type of departmentalization is now dominant in large US business firms, having displaced the functional type, and this dominance requires explanation. Data for the study were collected on the 100 largest non-financial firms in the USA from 1919 to 1979. The lists of the 100 largest firms, by asset size, at each point in time were taken from Collins and Preston (1961) for the years 1919-1948 and *Fortune* magazine (1960, 1970, 1980) for the years 1959-1979.

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**367***Definition*

A general definition of departmentalization is not explicitly provided. It is clear, however, that the subdivision of work is the basic meaning of "form". The multidivisional form is defined as a decentralized management structure; organized into product divisions, each division containing a unitary structure; and a central office to make strategic decisions.

*Data collection*

Data about the multidivisional form was taken from *Moody's Manuals*, Chandler (1962), and Rumelt (1974). *Moody's* provided the primary data for this study. *Moody's* describes the divisions of the forms by listing the heads of the divisions. From these titles, one can ascertain the type of departmentalization used. In 1929, for instance, US Steel had divisions described as "mining operations", "shipping lines", "smelting and refining", and so forth. These divisions indicate a functional type of departmentalization. Chandler and Rumelt were used to check *Moody's*.

*Computation*

A five-fold classification scheme of organizational forms is presented: unitary, functional, geographic, holding company, and multidivisional. The unitary form means an organization divided into manufacturing, sales, and finance divisions. A functional form signifies an organization divided along discrete task lines. An oil company, for instance, might be divided into the following functional departments: drilling, shipping, refining, and retailing. Geographical forms reflect businesses divided into departments along area lines, such as north, south, east, and west. Holding companies are legal devices whereby central offices operate as portfolio managers, while each subunit operates independently. The multidivisional form was previously defined. Rumelt (1974) is the source of this classification scheme.

The purpose of Fligstein's study only required that the firms examined be classified as switching to the multidivisional form during a specific decade. This dichotomous, dependent variable did not require use of the five-fold classification scheme.

*Validity*

Five theories of organizational change are proposed to explain the spread of the multidivisional form:

- (1) strategy-structure (Chandler, 1956, 1962);
- (2) transaction cost analysis (Williamson, 1975; Williamson and Ouchi, 1981);
- (3) population-ecology theory (Hannan and Freeman, 1977, 1984);
- (4) control theory based on power (Karpik, 1978; Perrow, 1970, 1981; Pfeffer, 1981); and
- (5) organizational homogeneity theory (DiMaggio and Powell, 1983).

The results indicate that those in control of large organizations switched to the multidivisional form when they were pursuing a multiproduct strategy; when their competitors shifted forms; and when they had an organizational background in either marketing or sales. These results thus contain elements from strategy-structure, control theory, and organizational homogeneity theory. Transaction cost analysis and population-ecology theory are not well supported by the results. Since these results are consistent with components of existing theory, the validity of the measurement of the dependent variable is supported. As previously indicated, this study does not require use of the five-fold classification scheme.

*Reliability*

Traditional reliability coefficients, such as coefficient alpha and test-retest, are not presented. However, mention is made of the fact that when the dependent variable – whether or not a firm switched to the multidivisional form during a decade – was coded, two coders independently classified the firms' organizational structure as switching or not switching during a decade. In case of disagreement among the coders, the author went back to check the sources and made a final judgment. As previously indicated, Chandler (1962) and Rumelt (1974) were used as checks on the decisions, and when the coders disagreed with either source, these disagreements were also examined and resolved by Fligstein. No numbers are provided regarding the extent to which the two coders disagreed with each other.

*Comments*

The definition of multidivisional form introduces elements of power into the discussion of departmentalization. It is noted that the multidivisional form is decentralized and has a central office which makes strategic decisions. Decentralization and a central office are elements of power and should be excluded from discussions of departmentalization. The material about product divisions and a unitary structure are properly included under the departmentalization rubric. The subdivision of work should be distinguished from the allocation of power.



Researchers are often instructed to study organizational records to learn about departmentalization, but exactly what records should be examined is not always specified. Fligstein is to be applauded for clearly specifying the sources of his information about departmentalization. Organizational charts, as Armour and Teece note (1978, p. 111), are also sources of information about departmentalization.

Four comments are pertinent about computation. First, contrary to the handbook's definition of measurement, the five-fold classification scheme involves no assignment of numbers. By custom, however, nominal classification is considered as the first level of measurement. Second, the handbook is unable to distinguish unitary and functional departmentalization. They seem to be alternative forms of work subdivision rather than two types. Fligstein did not have to distinguish unitary and functional departmentalization, because his research only required the use of the multidivisional form. Most research on departmentalization refers only to the functional type of work subdivision. Third, a holding company is a legal device and not a type of departmentalization. The type of departmentalization is only apparent when one examines the first subdivision of work of the operating company owned by the holding company. Fourth, it is interesting that no classification is provided for a matrix structure. This is consistent with the handbook's position that matrix structures do not constitute a distinct type of departmentalization.

It would have been cleaner if explanation of the spread of the multidivisional form had fit a single, widely-agreed on theory rather than being consistent with components of three different theories. However, the consistency that exists provides weak evidence for the validity of the measurement of the multidivisional form. It would also have been cleaner if the five-fold classification system had been used rather than only the multidivisional component of this system. Again, however, it is helpful for construct validity to have a single component of the classification scheme corroborated.

The reliability information would have been stronger had statistics been provided about the frequency with which the two coders disagreed with each other. It is implied that the coders seldom disagreed with each other.

*Source*  
Fligstein (1985).

#### Notes

1. This definition is based on Scott (1981, pp. 213-14). See also Daft (1983, pp. 200-58); Galbraith (1973); Mintzberg (1979, pp. 104-33, 148-80); and Price (1968b).
2. See Daft (1983, pp. 237-43) and Davis and Lawrence (1977) for discussions of matrix structures.
3. Some examples of this concern are Chandler (1962); Daft (1983, pp. 200-58); Grinyer and Yasai-Ardekani (1981); Rumelt (1974).
4. Simon referred to "place" rather than Gulick and Urwick's "area". See also Simon *et al.* (1958, pp. 150-79) for a later critique of these early organizational scholars.

## 9. Effectiveness

### Definition

Effectiveness is the extent to which an organization achieves its goal[1]. A business that is highly profitable, a hospital that provides good patient care, a school that successfully educates its students, a military unit that wins battles – all are illustrations of effective organizations. Many discussions of effectiveness refer to “mission” rather than to goal. Relevant data about effectiveness are also found in discussions of organizational performance, failure, decline, success, mortality, and survival. The contemporary view of effectiveness comes from the work of Barnard (1938). Barnard’s impact on the study of organizations has been extensive, partly due to his influence on Simon (1950).

Organizations can, of course, seek to achieve multiple goals. Many universities, for example, seek both to educate their students and to increase knowledge. Or again, university hospitals endeavour to provide good patient care, add to medical knowledge, and to train medical personnel.

There are five observations that are commonly made regarding organizational goals[2]:

- (1) There is nothing mystical about organizational goals. In a business, for instance, key executives may decide that return on assets is the future state of affairs that they prefer the organization to achieve, and they will then allocate resources to achieve this goal. These executives will typically occupy the highest positions in the organization and they will usually embody their decisions in some type of record – at least in the larger organizations. These major executives often represent a coalition of divergent organizational interests and constitute a dominant coalition.
- (2) The goals of these major executives may be different from the goals of the employees and customers of the organization – to cite but two constituencies. The goals of employees and customers are important and will typically be taken into account by the major executives. However, in evaluating effectiveness, it is the executives’ goals which are critical. It is the executives who will legitimately allocate most of the resources that determine the major amount of behaviour that takes place in the organization.
- (3) Organizations will often publicize some of their “goals”. Prisons and mental hospitals will sometimes indicate that their primary concern is the rehabilitation of their inmates when, in fact, custody of the inmates – keeping the inmates within the boundary of the prison or hospital – is their major focus. Rehabilitation is not a true goal – sometimes this type of “goal” is termed an “official goal” – because the key executives have not decided to pursue this future state of affairs by allocating resources to achieve this goal. The operative goal – custody – is the true goal.

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- (4) Personal goals must be distinguished from organizational goals. The business executives who decide that the organization should pursue return on assets – to return to the previous illustration – will have a number of personal goals. Some may be primarily concerned with becoming the chief executive officer, others may mostly be concerned with accumulating wealth, while still others may be strongly motivated to receive recognition from their colleagues. The executives cannot legitimately use the resources of the organization to achieve their personal goals; the resources can only be used to pursue return on assets.
  - (5) Finally, there is the question of how to determine the goals of an organization. Verbal statements are a good place to start, since goals are often widely publicized, at least within organizations. However, behaviour must also be examined, because statements about goals will sometimes be for public consumption rather than truly operative. Goal-determination is a complicated process, especially when multiple goals are involved and one is seeking to rank order them.

Effectiveness should be distinguished from productivity, a topic to be treated in Chapter 22. A business, for instance, may be a low-cost producer but not achieve much profitability, such as return on assets, due to intense competition. Or again, a business may be a high-cost producer but achieve high profitability because of its monopoly position. The extent of goal achievement should be distinguished from the cost of producing a product. Effectiveness and productivity are probably positively related most of the time, but the two concepts are different and should be distinguished.

### **Measurement**

The handbook returns again to the National Organizations Study (NOS) for a measure of effectiveness. It is natural that the NOS be used several times in the handbook, because its objective is similar to the handbook's. The NOS seeks to describe a representative sample of US organizations with a frame of reference that is widely used by organizational scholars. The handbook seeks to codify measures that are widely used by organizational scholars; these measures will, of course, use the frame of reference common to the scholars. Given its method of data collection – a telephone interview with a single informant – it was impossible for the NOS to cover all the concepts used by organizational scholars. There is thus still a niche for the handbook! Not only are the objectives of the NOS and the handbook similar, but the work of the NOS is included so often because of its superior quality, both theoretically and methodologically.

### **Kalleberg *et al.* (1996)**

#### *Description*

The National Organizations Study (NOS) was first described in the chapter on administrative intensity and this information need not be repeated. What is critical for this selection is the NOS material about “performance”.

*Definition*

Performance is not explicitly defined. However, as the next section of data will indicate, performance implicitly means doing better or worse than comparable organizations in 11 areas of operation. This implicit definition is consistent with how performance is generally defined in organizational study.

*Data collection*

The plant manager was asked: "How would you compare (your organization's) performance over the past three years to that of the other organizations that do the same kind of work? (Much better, somewhat better, about the same, worse) What about...[3]:

- (1) quality of new products, services, or programmes;
- (2) development of new products, services, or programmes;
- (3) ability to attract essential employees;
- (4) ability to retain essential employees;
- (5) satisfaction of customers or clients;
- (6) relations between management and other employees; and
- (7) relations between employees in general.

If organization is profit-making continue. Otherwise, skip to...

- (8) marketing;
- (9) growth in sales;
- (10) profitability; and
- (11) market share.

(These are questions numbers 75 and 76 in the telephone-interview schedule.)

*Computation*

The four responses were scored from one (worse) to four (much better). Five performance scales were constructed with the 11 items: *products* (composed of items measuring product quality and product development), *employees* (attract and retain essential employees), *customer satisfaction* (single item), *relations* (labour-management relations and employee relations), and (for profit-seeking organizations) *market factors* (composed of items measuring marketing, growth in sales, profitability, and market share). Means and standard deviations are not provided for the five performance scales.

*Validity*

Two sets of data are pertinent for validity. First, the researchers did a confirmatory factor analysis of the 11 production items. Two models were tested, a five-factor model for profit-only organizations and a four-factor model for all organizations (with the market factor removed). The five-factor profit

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model has a GFI statistic of 0.96 with an adjusted GFI of 0.93, whereas the four-factor model has a GFI of 0.99 with an adjusted GFI of 0.97[4]. Second, the five performance scales were correlated with human resource management practices and policies believed to characterize high-performance organizations. The literature suggests that high-performance organizations should be decentralized, invest heavily in job training, have performance-based compensation, and have a firm internal labour market. Results indicate that the human resource management practices and policies believed to be correlated with high-performance organizations are associated with better performance on some, but not all dimensions.

#### *Reliability*

No information is provided about reliability.

#### *Comments*

High-performance organizations are probably highly effective organizations. Major decision-makers of all organizations generally seek to increase the first seven items and the managers of profit-making organizations normally seek to increase the last four market factors. The handbook thus considers performance and effectiveness to be very similar concepts.

The NOS offers a fresh approach to collecting data about what to this handbook is organizational effectiveness. Rather than getting bogged down in endless discussions about organizational goals, the NOS simply postulates 11 “goals” that most scholars will recognize as accurate descriptions of typical organizational behaviour. Some depth is lost with these 11 goals, but what is lost in depth is more than compensated for by the ability to move ahead in explanation of organizational effectiveness.

A puzzle exists concerning data collection. Earlier it was noted that a single informant was used to collect the data during a telephone interview. Because the information requested was so extensive and mostly involved the area of human resource management, the handbook suggested that the informant must have been a high executive in the area of human resource management. The NOS provided no information about the position of the informant who provided the data. At this point, however, the NOS indicates that the data about performance was collected from the “plant manager” (p. 122). It is reasonable to ask the plant manager to assess organizational performances. However, it is difficult to conceive of the plant manager supplying the rest of the specialized information requested by the NOS. The plant manager may have made the assessment of performance for the human resource executive who served as the basic informant. This aspect of data collection should have been clarified by the NOS. “Plant manager” must also be an inaccurate label because most of the top executives will not be managing plants. “Chief executive officer” might have been a more accurate label[5].

Means and standard deviations should have been provided for the five performance scales. The NOS is usually very careful about providing this type of routine statistical information.

The confirmatory factor analysis provides support for collapsing the 11 items into five performance scales and the correlations with established human resource management practices/policies indicate moderate corroboration for the construct validity of the measures. However, human resource management practices and policies constitute a narrow set of the determinants of effectiveness. Controls are also not provided. What is needed is a more comprehensive set of determinants analysed with multivariate procedures.

*Source*

Kalleberg *et al.* (1996).

**Notes**

1. There is a massive literature about organizational effectiveness. The following sources constitute a critical part of this literature: Becker and Neuhauser (1975); Cameron (1978, 1981); Cameron *et al.* (1987a, 1987b); Campbell *et al.* (1974); Goodman and Pennings (1977); Mohr (1973); Mulford *et al.* (1972); Perrow (1961); Price (1968a, 1972b); Simon (1964); Spray (1976); Steers (1977); Zammuto (1984).

Although the goal approach is dominant in the study of effectiveness – that is, defining effectiveness in terms of the achievement of goals – other approaches exist, such as the system resource approach. See Price (1972a) for a discussion of the system resource approach.

2. These five observations are discussed in the previously-cited literature.
3. The interview schedule uses letters rather than numbers for these items.
4. The researchers also tested both the five-factor and four-factor models with an incremental test statistic (Bollen, 1989, p. 269). The five-factor and four-factor structures were compared to a one-factor model (incremental GFI = 0.878 for profits and 0.949 for all organizations) and a two-factor model (with product quality, product development, and customer satisfaction loading on one factor; attract, retain, labour-management relations, and employee relations on the second factor). The incremental GFI for profits against the two-factor model is 0.703 and the incremental GFI for all organizations is 0.933.

The reader should remember that the term “model” in LISREL analysis does not have the same meaning as “model” in theoretical analysis. In the handbook, “model” usually has a theoretical meaning, unless data about LISREL are being summarized.

5. At first glance, it appears that the first two items violate the rule of having each item assess a single idea. Note the reference to “new products, services, or programmes”. However, products, services, and programmes basically refer to the output of the organization and will probably be interpreted in this manner by respondents. The NOS should probably have used something like “output” to collect data about the first two items.

### Definition

By definition, the environment provides the context in which the organization operates. When doing research, it is often not an easy task to divide the organization from its environment. In community hospitals, for instance, should the physicians, most of whom operate private businesses in the community, be considered as members of the hospitals? Or again, should students of a university – the clientele of the university – be considered as members of the university? Still again, should the governing board of a state government agency, which is politically appointed to regulate the agency, be viewed as part of the agency? Answers to these questions are critical to research. Centralization, for example, will be assessed very differently depending on whether the students are considered members or non-members of the university.

The handbook defines membership in the organization in terms of subjection to the norms of the organization: individuals subjected to these norms are members, whereas those not subjected to these norms are non-members[1]. If an individual is subjected to the norms of an organization, then sanctions legitimately at the disposal of the organization can be used to reward conformity or punish deviance. By this criterion, the physicians and students in the previous illustrations would be considered to be members of community hospitals and universities respectively. Since the governing board of the state government agency makes the norms that the agency is expected to follow, the members of the board would not be considered as members of the agency. Organizational norms are generally termed “rules and regulations”.

Three environmental concepts are distinguished: complexity, uncertainty, and competition[2]. These concepts will be defined in terms of the social units that regularly have contact with the organization. Complexity is the number of social units that have such contact. A large organization, for instance, will have a much more complex environment than will a small one. Uncertainty is the predictability of the social units that have regular contact with the organization. Units that are changing rapidly will typically provide a more uncertain environment than units that are undergoing little change. Competition is “...the occurrence of some form of mutual interference among population members in relation to the use of some common resource” (Tucker *et al.*, 1988, p. 128)[3]. When many organizations are attempting to service the same clientele, then competition among the organizations is intense. Competitors will typically have many forms of regular contact with each other.

This chapter on the environment is included in the handbook because it is a topic of concern to organizational scholars. Not all chapters in the handbook use the organization as the unit of analysis. “Organizational measurement” means measures used by organizational scholars; the unit of analysis of the measures is not the major concern.

### **Measurement**

The 1972 and 1986 editions of the handbook had no chapter on environmental concepts, because no acceptable measures could be located. The National Organizations Study (NOS) has now remedied this deficiency and is the first selection used for this chapter. Since the NOS has measures for complexity, uncertainty, and competition, the three concepts will be considered together for this selection.

The second selection by Buchko (1994) focuses only on uncertainty and is an alternative to the NOS measure of this concept. An advantage of the Buchko selection is that he reviews the literature about uncertainty.

### **Kalleberg *et al.* (1996)**

#### *Description*

The earlier description of the National Organizations Study (NOS), in the discussion of administrative intensity, need not be repeated. As previously indicated, the concern of this chapter is with the NOS material pertaining to complexity, uncertainty, and competition.

#### *Definition*

Complexity, uncertainty, and competition are used to characterize the environment, but no explicit definition is provided for the terms.

#### *Data collection*

Complexity was assessed by first asking the respondents: "For each of the following statements, please tell me if you agree or disagree". The following four statements were read over the telephone[4]:

- (1) The techniques, skills, and information needed by (the organization) are changing very rapidly.
- (2) To achieve our goals, it is essential to work co-operatively with many other organizations.
- (3) Our relations with other organizations are sometimes marked by conflict.
- (4) (The organization) concentrates on what it does well and takes few risks.

As indicated in the lead-in, two responses were provided, "agree" or "disagree". (These four items come from question number 78 on the telephone-interview schedule.)

The same lead-in and responses were provided for uncertainty as for complexity. However, two items rather than four were used to measure uncertainty: "(The organization) mostly reacts to outside pressure"; and "making long-range plans for this organization is hindered by the difficulty of predicting future events". (These two items also come from question number 78 on the telephone-interview schedule.)

Two items, located later in the telephone interview, were used to collect data about competition: "How much competition would you say there is in (the organization's) main market or service area?"; and "how much competition would you say there is in (the organization's) main market or service area from



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*foreign organizations?”* Four responses were provided for each of the two competition items: “none, very little, a moderate amount, and a great deal”. (These are question numbers 86 and 87 on the telephone-interview schedule.)

#### *Computation*

The six items for complexity and uncertainty were scored with “agree” equal to one and “disagree” equal to two. For competition, the scoring for the two items were as follows: none (1), very little (2), a moderate amount (3), and a great deal (4). It is not clear whether the items for the different scales were summed or summed and divided by the number of items. (This scoring comes from the telephone interview schedule and not the book.) Means and standard deviations were not provided.

#### *Validity*

Two sets of information are relevant for validity. First, the six items for complexity and uncertainty were subjected to a principal components factor analysis with varimax rotation (p. 249)[5]. The four complexity items loaded highly on the first factor (eigenvalue = 1.65, percentage of variance explained = 23.6), whereas the two uncertainty items loaded highly on the second factor (eigenvalue = 1.16, percentage of variance explained = 16.6). Second, based on a review of the literature, it was hypothesized that complexity, uncertainty, and competition would increase the benefit package provided by the organization to its employees (p. 236). Benefits are non-wage payments, such as medical and dental care. Eleven benefits were examined. The multivariate analysis indicates that only the local market competition – the first of the two competition items – increases the benefit package (p. 242).

#### *Reliability*

No data are provided about reliability.

#### *Comments*

It is unfortunate that complexity, uncertainty, and competition are not defined. As will soon be indicated, this hinders the evaluation of the scales' validity. It is also unfortunate that complexity is used later in the handbook (Chapter 27) as a dimension of technology. The labels are the same but the concepts have different references.

Two comments are relevant about data collection. The “agree-disagree” responses for complexity and uncertainty should have been expanded to more responses to obtain greater variation; and the two-item scale for competition should have been enlarged. In estimating the proposition about employee benefits, it appears as if two single indicators were used rather than a single scale with two items. A four-item scale, such as for complexity, would have been much better.

The scoring should have been more fully described. Means and standard deviations should also have been provided.

Two observations are pertinent about validity. First, a confirmatory factory analysis (CFA) is needed for all the items for complexity, uncertainty, and competition. The first item for complexity, for instance, seems more relevant to uncertainty. Also for complexity, it is not clear how the third and fourth items pertain to the environment's differentiation. Still again, it is not clear how the first item for uncertainty is related to predictability. Even without a CFA, this evaluation would have been simplified had the NOS provided clear definitions for the three concepts. The handbook should not have to supply its definition for these concepts. Second, the assessment of construct validity by employee benefits is very narrow, since the environment will have a series of impacts on the organization besides that on the benefit package. This narrow assessment is understandable owing to a lack of well-codified theory concerning the environment's impact on organizations. Because only the results for local market competition were in conformity with theoretical expectations, these results supply weak support for construct validity.

Coefficient alphas for the three scales should have been computed.

The NOS's measures for complexity, uncertainty, and competition are not as good as the measures this study usually provides. The quality of measurement in a particular study strongly depends on the amount of measurement research in the area being researched. When there is an extensive amount of measurement work in an area, such as with satisfaction, it is easier for any particular study to use and/or develop quality measures. Where there is little measurement work in the area, as there is for environmental concepts, then it is much more difficult to use and/or develop quality measures. The NOS has made a good beginning and it is up to other scholars in the field to improve the measure they have developed[6].

*Source*

Kalleberg *et al.* (1996).

### **Buchko (1994)**

*Description*

The purpose of this research was to examine the measurement properties of Miles and Snow's (1978) perceived environmental uncertainty scale. Firms which supplied parts and components to the automobile industry were the sites of the research. Within the firms, the chief executive officers constituted the sample. The data were collected by questionnaires mailed to these officers in the summer of 1989. Finally, 350 questionnaires were mailed and 137 usable ones returned, for a 39 per cent response rate. A second questionnaire was mailed to the executives four weeks after they returned the first questionnaires. Of these, 56 usable questionnaires were available for analysis.

*Definition*

Perceived environmental uncertainty exists to the degree that executives believe that the organization's environment is unpredictable (p. 411). The

executives in the research were the chief executive officers of the firms which supplied parts and components to the automobile industry.

*Data collection*

To collect the data to measure perceived environmental uncertainty, 25 questionnaire items were used. The following lead-in preceded these items: "We are interested in your company's relationships with various sectors of the external environment (e.g. suppliers, customers). Specifically, we would like you to rate the characteristics or behaviour of various sectors on the degree of their predictability, where 1 = highly predictable and 7 = highly unpredictable" (Miles and Snow, 1978, p. 200). The 25 items, plus their scoring, were as follows:

	Predictable	Unpredictable				
	(circle one)					
1. Suppliers of your raw materials and components:						
a. their price changes are.....	1	2	3	4	5	6 7
b. quality changes.....	1	2	3	4	5	6 7
c. design changes .....	1	2	3	4	5	6 7
d. introduction of new materials or components.....	1	2	3	4	5	6 7
2. Competitors' actions:						
a. their price changes are.....	1	2	3	4	5	6 7
b. product quality changes.....	1	2	3	4	5	6 7
c. product design changes .....	1	2	3	4	5	6 7
d. introduction of new products.....	1	2	3	4	5	6 7
3. Customers:						
a. their demand for existing products is.....	1	2	3	4	5	6 7
b. demand for new products.....	1	2	3	4	5	6 7
4. The financial/capital market:						
a. interest rate changes:						
1. short-term debt.....	1	2	3	4	5	6 7
2. long-term debt.....	1	2	3	4	5	6 7
b. changes in financial instruments available:						
1. short-term debt.....	1	2	3	4	5	6 7
2. long-term debt .....	1	2	3	4	5	6 7
c. availability of credit:						
1. short-term debt.....	1	2	3	4	5	6 7
2. long-term debt.....	1	2	3	4	5	6 7
5. Government regulatory agencies:						
a. changes in laws or agency policies on pricing are .....	1	2	3	4	5	6 7
b. changes in laws or policies on product standards or quality ....	1	2	3	4	5	6 7
c. changes in laws or policies regarding financial practices.....	1	2	3	4	5	6 7
d. changes in labour (personnel) laws or policies.....	1	2	3	4	5	6 7
e. changes in laws or policies affecting marketing and distribution methods.....	1	2	3	4	5	6 7
f. changes in laws or policies on acceptable accounting procedures.....	1	2	3	4	5	6 7
6. Actions of labour unions:						
a. changes in wages, hours, and working conditions.....	1	2	3	4	5	6 7
b. changes in union security.....	1	2	3	4	5	6 7
c. changes in grievance procedures (Miles and Snow, p. 200) .....	1	2	3	4	5	6 7

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*Computation*

As indicated in the lead-in statement, the scoring runs from one to seven, with one scored as highly predictable and seven as highly unpredictable. The mean and standard deviation for all the items on the initial test are 76.14 and 14.35 respectively. On the retest, the corresponding scores are 79.11 and 17.79 (p. 417). The 25 items are apparently summed to obtain these scores.

*Validity*

Based on the research by Milliken (1987), Buchko hypothesized that high levels of environmental uncertainty are related to strategies that increase organizational diversification. Buchko, therefore, measured the executives' perception of the amplitude and frequency of change in their firms' products and processes as criterion variables. Amplitude focused on the introduction of new products or services within the preceding two years and the extent of change in the production processes in the last five years. Frequency examined the extent of major changes in the firms' products and processes.

With two exceptions, the six subscales and the overall perceived environmental uncertainty scale do not correlate with any criterion measures. The two exceptions are the competitor subscale which correlates positively and significantly with the amplitude of product and process change (p. 420). Buchko suggests that "...these results do not support the criterion-related validity of the scale" (p. 419).

*Reliability*

Reliability was assessed by coefficient alpha and a test-retest coefficient. Two alphas were calculated, one for the initial test and the other for the retest. The two alphas for all the items are 0.85 and 0.92. For the test-retest, the coefficient is 0.48.

*Comments*

The handbook views environmental uncertainty as unpredictability rather than *perceived* unpredictability. Historically, the focus of the literature appears to be on unpredictability rather than its perception. Like Buchko and the literature which he reviews, the measure of unpredictability is typically perceptual. Buchko's measure can thus be used to assess the handbook's concept of environmental uncertainty.

Twenty-five items will be too long for many researchers. It will be difficult to shorten the Miles and Snow scale, since environments are complex and the different elements need to be assessed. Researchers who investigate environmental uncertainty may be able to accept a long scale.

As Buchko notes, the validity of the Miles and Snow scale is not acceptable with the data provided by this research. Four comments are pertinent. First, validity might be improved by evaluating the Miles and Snow scale with a causal model rather than a single proposition. This would, of course, require a survey of the literature to compile a list of the impacts that environmental

uncertainty is believed to have on the organization. Second, validity might be improved by collecting data from the major executives of the organization rather than from only the chief executive officers. The chief executive officer will deal extensively with the environment, but so also will many of the other major executives. It is appropriate to focus on the executives, since they generally have extensive knowledge about the environment. The number of executives queried will depend on the organization's size. Third, validity might be improved with a greater range of organizations. This sample only included firms that supplied parts and components to the automobile industry. Fourth, a larger sample is needed, especially if a more elaborate causal model is estimated; 137 organizations are not sufficient to estimate a more elaborate causal model.

As assessed by alpha, the Miles and Snow scale has very good reliability. However, the test-retest coefficient is not acceptable. A larger sample might result in a larger test-retest coefficient.

Although the psychometric properties of the Miles and Snow scale, especially its validity, did not fare too well in this research, a revised version of the scale may be more acceptable in future research if modified by the handbook's suggested improvements. Environmental uncertainty is an important organizational concept and Buchko's research is a welcome addition to the literature.

#### *Sources*

In addition to Buchko (1994), also relevant are Ireland *et al.* (1987) and Miles and Snow (1978).

#### **Notes**

1. This criterion is advanced by Pfeffer and Salancik, as reported in Scott's discussion (1981, pp. 180-1) of this topic. Etzioni (1961, pp. 16-21) and Merton (1968, pp. 338-42) have helpful discussions of the boundary question. Barnard (1938) appears to have first addressed this topic explicitly in his classic work on executives. Empirical work on the boundary question is not extensive.
2. The following sources have helpful discussions of the environment: Aldrich (1979); Pfeffer and Salancik (1978); and Scott (1981).
3. The handbook's view of competition comes from the research of organizational ecologists, for whom competition is a major concern. There is little in the handbook from the research of organizational ecologists, despite the theoretical and methodological sophistication of their research. Organizational ecologists are not represented in the handbook, because their research does not examine the type of concerns investigated in most studies of organizations. The handbook attempts to represent primarily the main body of organizational research. Major works by organizational ecologists are Carroll (1988); Carroll and Hannan (1995); Hannan and Freeman (1989); Hannan and Carroll (1992).
4. The interview schedule uses letters rather than numbers for these items.
5. A seventh item ("the political climate right now is very favourable to our goals") was also included in the factor analysis. This item did not load on either of the two factors, complexity or uncertainty (p. 249).
6. The NOS can, of course, improve their own measures.

## 11. Formalization

### **Definition**

Formalization is the degree to which an organization's culture is written[1]. Examples of culture are knowledge, ideology, rules, regulations, policy, and history[2]. Traditionally, "written" has meant some form of paper. Rules and regulations, for example, have commonly been contained in handbooks issued by the organization. Written must now be expanded to include tapes, cassettes, disks – in short, all the accoutrements of the modern computer age. "Documentation" is a common synonym used in place of "written" to define formalization.

Although the Aston Group is cited as the source for formalization's definition, this conceptualization is widespread in the literature. However, some scholars (Hall, 1982, pp. 95-9; Scott, 1981, pp. 59-62), define formalization by the degree of explicitness: the greater the explicitness, the greater the formalization. The handbook's view is that the written aspect of an organization's culture is more important to the organization's operations than its explicitness. It is, for instance, easier to preserve and locate a large culture if it is in a written form. Consider how difficult it would be to preserve and locate the rules and regulations of the Federal Government of the United States if they were not written. Or again, it would be a horrendous task to preserve and locate the knowledge of a large, high-technology firm without compiling its culture in a written form. A written culture also frees the organization from dependence on specific employees. With a written culture, an organization's effectiveness is less negatively influenced by the turnover of key employees than would be the case if the culture were not written. Employees who leave, of course, take with them components of the organization's culture; however, most of the culture remains in the organization in some written form. It is difficult to think of examples which illustrate how explicitness influences an organization's operations. Explicitness can even be achieved by compiling the culture in a written manner. As anthropologists have stressed the importance of a written language to human society – referring, for example, to literate or preliterate societies – so the handbook asserts the basic importance of a written culture to an organization's operations.

Sometimes formalization is defined (Price and Mueller, 1986) in terms of norms rather than the more comprehensive term "culture". Too much of significance is excluded if formalization is restricted to norms. If "written" is as significant as the handbook believes, then it becomes even more important to define formalization in a more comprehensive manner.

### **Measurement**

The handbook seeks to provide a variety of quality measures to gauge the concepts used to describe organizations. This chapter will illustrate this preference. The measure by Podsakoff *et al.* (1993) illustrates the traditional,

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questionnaire approach to data collection, whereas Kalleberg's *et al.*'s (1996) National Organizations Study (NOS) resembles the Aston Group's records-based approach to data collection.

**Podsakoff *et al.* (1993)***Description*

This study sought to test Kerr and Jermier's (1978) substitutes for leadership model. Formalization is one of 13 substitutes for leadership that Kerr and Jermier propose. The handbook will only focus on the material about formalization and not examine the full test of Kerr and Jermier's model.

Two studies were done. The first study consisted of 372 working MBA (Masters of Business Administration) students located in a large metropolitan area in the midwestern part of the USA. Sample respondents worked in a variety of industries. The second study consisted of 176 university building service employees; 213 administrative, clerical, and professional insurance employees; and 223 managers of a gas transmission company.

*Definition*

Formalization is not explicitly defined. As previously indicated, formalization is but one of the 13 substitutes for leadership proposed by Kerr and Jermier's model.

*Data collection*

The following six questionnaire items were used to collect information about formalization[3]:

- (1) Clear, written goals and objectives exist for my job.
- (2) My job responsibilities are clearly specified in writing.
- (3) In this organization, performance appraisals are based on written standards.
- (4) Written schedules, programmes, and work specifications are available to guide me in my work.
- (5) My duties, authority, and accountability are documented in policies, procedures, or job descriptions.
- (6) Written rules and guidelines do not exist to direct my work efforts (R) (pp. 6-7).

Seven-point Likert scales, ranging from "strongly disagree" to "strongly agree", were provided for the respondents.

*Computation*

"Strongly disagree" and "strongly agree" were scored as one and seven respectively. Judging from the mean, the six items were apparently summed to obtain a total score. A mean and standard deviation were not provided for

formalization in the first study. The mean and standard deviation in the second study are 26.13 and 7.44 respectively (p. 21).

*Validity*

The most important information about validity is Podsakoff *et al.*'s factor analysis of the 13 substitutes for leadership contained in the Kerr and Jermier model. Formalization, it may be recalled, is one of the 13 substitutes for leadership. Other illustrations of substitutes are professional orientation, intrinsically satisfying tasks, organizational flexibility, advisor/staff support, and cohesive work groups. With a few exceptions, the factor loadings are mostly consistent with the a priori assignment of the items to the 13 factors (pp. 15-19). The loadings for formalization are as follows: 0.62, 0.68, 0.28, 0.54, 0.65, and 0.53. All the loadings, except the 0.28, are above the 0.35 cut-off point used in the analysis. Also relevant for validity are the item-to-total correlations. The following correlations are for formalization's six items: 0.52, 0.60, 0.29, 0.50, 0.63, and 0.50. All the correlations are of moderate magnitude, except the low correlation (0.29) for the third item. The third item also has a low factor loading.

*Reliability*

The first study provides no reliability coefficient for formalization; it is noted that the coefficients for the 13 leadership substitutes average 0.84. The alpha coefficient in the second study is 0.88.

*Comments*

The six questionnaire items make it clear that Podsakoff *et al.*, like the handbook, view formalization in terms of written records. All the six items refer, in one way or another, to written records. However, Podsakoff *et al.* view the written records somewhat more narrowly than the handbook. Goals, job responsibilities, performance appraisals, schedules, duties, and rules are not as comprehensive as the handbook's view of culture. Knowledge and ideology are clearly excluded by Podsakoff *et al.*'s implicit definition. However, the Podsakoff *et al.* measure does seem to tap basically what the handbook has in mind regarding formalization.

Four comments are relevant to data collection. First, some of the six items refer to more than a single idea. The first item, for instance, refers to "clear, written goals". Again, "schedules, programmes, and work specifications" (fourth item) seems to refer to different types of written records. Still again, "duties" and "authority" (fifth item) are clearly different dimensions of a job. Each questionnaire item should refer to a single idea. Second, it would have been better to have two or three reverse-coded items to guard against response-set bias. One reverse-coded item does not provide enough protection against this bias. Third, all seven of the responses should have been provided. Researchers must now guess at the five other responses. While this guessing is not too difficult, it should not be necessary since the seven responses could easily have



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been provided. Fourth, the third item should be substantially revised, since its factor loading and item-to-total score are low.

The psychometric properties of the formalization measure are quite acceptable. Especially impressive is the factor analysis of the 13 substitutes for leadership. These results are even more impressive when it is recalled that formalization is but a minor component of the study by Podsakoff *et al.*

*Source*

In addition to Podsakoff *et al.* (1993), also relevant is Kerr and Jermier (1978).

**Kalleberg *et al.* (1996)**

*Description*

The National Organizations Study (NOS) was described when it was first used as a selection for administrative intensity, and this description does not need to be repeated. As previously indicated, what is now of concern is the NOS's data about formalization.

*Definition*

Formalization is defined as the extent to which an organization has "...written documentation for several types of personnel-related processes, including hiring and firing, personnel evaluation, and fringe benefits" (p. 75). This definition is not fully explicit – note the casual "*several* types of personnel-related processes" (emphasis added) – nor fully implicit, since components of the definition are specified.

*Data collection*

The following eight questions were used in the telephone interview to collect information about formalization: "Do each of the following documents exist at (the organization)? What about..."[4]:

- (1) A "rules and procedures" manual?
- (2) Written job descriptions for most jobs?
- (3) A written record of nearly everyone's job performance?
- (4) Employment contracts?;
- (5) Documents telling how personnel evaluations are carried out?
- (6) Documents outlining hiring and firing procedures?
- (7) Documents describing safety and hygiene practices?
- (8) Documents describing fringe benefits available to employees?"

The telephone interview provided three responses: "Yes, No, and Don't know". (These eight items are question number 70 on the telephone-interview schedule.)

*Computation*

Formalization is measured by the proportion of seven documents present in an organization. The fourth item on employment contracts was excluded from the computation and scores for the “don’t know” responses were imputed from responses to the other items using logistic regression. Weighted and unweighted scores are provided. The unweighted and weighted means are 0.73 and 0.26 respectively; corresponding standard deviations are 0.35 and 0.34 (p. 75). As previously indicated, the unweighted and weighted scores refer to individuals and establishments respectively.

*Validity*

Major results about formalization are pertinent to validity (pp. 326-9). Results from the multivariate analysis support the following eight propositions:

- (1) large organization size increases formalization;
- (2) being a public-sector organization increases formalization;
- (3) being a non-profit organization increases formalization;
- (4) being a private for-profit organization decreases formalization;
- (5) being a branch of a larger organization increases formalization;
- (6) formalization increases the likelihood of an organization having an internal labour market;
- (7) formalization increases the likelihood of dispute resolution procedures in an organization; and
- (8) formalization decreases the amount of gender segregation in an organization.

Since all the results are consistent with the literature, they provide evidence for construct validity.

*Reliability*

Coefficient alpha for the final seven-item scale is 0.90 (p. 75).

*Comments*

The NOS definition, though focusing on written records, is narrower than the handbook’s, since the NOS only focuses on written records for personnel-related processes. It would also have been helpful had the definition been more explicit.

There is a puzzle about the computation of the scores. The NOS indicates that the “don’t know” responses were imputed from responses to the other items using logistic regression (p. 75). Kalleberg and Van Buren’s (1996, p. 65) article on the same data also indicates that logistic regression was used to impute the “don’t know” responses. However, footnote a of Table 4.2 states that the “don’t know” responses were excluded from the percentages reported (p. 75). It is thus not clear whether the “don’t know” responses were used or not used. It is also not clear how logistic regression analysis was used to supply information about

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the “don’t know” responses. A source for this use of logistic regression would have been helpful.

The data about validity are impressive if one defines formalization in terms of written records for personnel-related processes. It is possible that formalization of personnel-related processes are highly correlated with formalization of other components of an organization, such as the production process. However, such a correlation must be empirically demonstrated, and, until such a demonstration is provided, judgement must be suspended about the NOS’s measure of formalization[5].

The results for reliability are impressive. This scale clearly provides a solid foundation from which to develop a quality measure of formalization.

*Source*

Kalleberg *et al.* (1996).

**Notes**

1. This definition is based on the work of the Aston Group. See Pugh *et al.* (1968, 1969).
2. The handbook uses the Parsonian definition of culture, that is, as a symbol system (Johnson, 1960 pp. 82-109).
3. The article by Podsakoff *et al.* refers to questionnaire numbers rather than to numbers.
4. The telephone-interview schedules use letters rather than numbers for these items.
5. The job focus of Podsakoff and his colleagues is considerably broader than the personnel-related processes measured by the NOS, especially since Podsakoff *et al.* survey many employees in the organizations studied.

## 12. General training

### **Definition**

General training is the degree to which the work ability of an individual is transferable between organizations[1]. Professional training, as an illustration, typically equips an individual to work in different organizations. Consider the diverse organizational settings in which physicians and nurses can work: hospitals, clinics, schools, businesses, nursing homes, government agencies, and so forth[2]. Craftsmen obtain much the same type of training as professionals. An electrician can, for example, obtain work from a wide variety of employers. "On-the-job" training, on the other hand, typically is quite organization-specific. A "diploma nurse", trained on the job in a hospital, has more hospital-specific knowledge and skills than a "baccalaureate nurse", who is trained in a university. Another example: an individual trained to operate cruise missiles in the US Air Force and Navy has knowledge and skills limited only to the US Air Force and Navy. General training is usually contrasted with specific training; the diploma nurse and cruise missile technician are said to have high levels of specific training.

The idea of general training comes from the human capital tradition in economics, where it is used in the study of economic development. Investments in the knowledge, skills, and health of people – all referred to as human capital – are required for economic development, just as much as investments in physical capital, such as plant and equipment. Economists also use general training as a variable in the explanation of turnover (Parsons, 1972; Pencavel, 1970). It is mostly employers who invest in specific training, and to protect their investment they increase the pay of the employees who have received that training; the increased pay, in turn, reduces turnover. Since general training is mostly invested in by employees, employers do not have the economic incentive to increase the pay of these employees, and thus they will exhibit more turnover. The labour market also provides more opportunities for generally-trained employees, further increasing their turnover. The concept of general training is also used by economists in the study of income inequality (Mincer, 1974).

General training is not used very often in the study of organizations, but the concept is included in this handbook to encourage its use. Since turnover is an important organizational concern, general training should be used in explanations of employee separations[3]. General training may also be relevant to the study of the impact of turnover on organizations. Where employee turnover is high, for instance, employers may be less willing to invest in either general or specific human capital[4]. Organizational scholars should also be interested in income inequality within their domain. Chapter 18 of this handbook discusses income inequality under the label of "pay stratification". General training, since it is an investment in human capital, is also an important determinant of productivity (Fabricant, 1969; Kendrick, 1977), a topic which is

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examined in Chapter 22. The handbook mostly seeks to represent the field of organizational studies accurately. Where changes are needed to move the field ahead – to develop better theory, for instance – the handbook is less concerned with being representative. General training is an instance where priority is assigned to moving the field ahead rather than being representative.

General training

### **Measurement**

**389**

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The experience of the handbook's author in the measurement of general training may be instructive. He has long sought to use general training in the study of turnover. When beginning a study of nursing turnover in 1975, he sought a measure of general-specific training for registered nurses. An examination of the literature indicated that economists typically measure general training by education, various types of work experience, and income[5]. A variation of the education measure seemed appropriate for the nursing research. Registered nurses who had been trained in colleges and universities – baccalaureate nurses – were assigned scores indicating the most general training, whereas registered nurses who had been trained in hospitals – diploma nurses – were assigned scores indicating the most specific training. Community-college-trained nurses – associate nurses – were assigned scores midway between the baccalaureate and diploma nurses. Some construct validity was indicated, since turnover was greater among nurses with baccalaureate training, that is, among those with the most general training (Price and Mueller, 1981, pp. 53-69).

A measurement problem was encountered, however, when the author later sought to study the turnover of all hospital employees, rather than just registered nurses. Since he needed a measure applicable to all employees, type of nursing training was not workable. A re-examination of the measures commonly used by economists – such as education, variations of work experience, and income – also revealed some serious problems. These measures seemed to lack validity in an organizational context. Amount of education, for instance, appeared to capture many concepts in addition to the level of general and specific training. Well-educated employees, for example, seemed to have more rewards – such as money, prestige, and power – than less-educated employees, and more rewards are believed to reduce turnover. Education may validly measure general and specific training in a large, modern society, but it seemed to possess much less validity in an organization (Price, 1995). The author, therefore, designed three questionnaire measures of general training and used them to study all hospital employees. The results were not satisfactory. Since the three items did not factor together, a single item was used and it was not a significant determinant of employee turnover in hospitals (Price and Mueller, 1986).

The selection by Kim (1996) constitutes another attempt to provide a valid and reliable questionnaire measure of general training that is not based on demographic variables, such as age and gender. Problems exist with Kim's measure, but it is an improvement over what exists in the field.

The handbook does not like to use selections based on dissertations, because such research is not easily available to other organizational scholars. However, despite this aversion, Kim's research contains the best measure that the handbook can find, so it is used.

**Kim (1996)**

*Description*

The purpose of this study was to explain employee intent to stay among automobile workers in South Korea. A total of 2,468 employees were asked to participate in the study. They were located at two plants, corporate headquarters, and 20 randomly selected sales and maintenance offices. The final sample consisted of 1,773 employees, for a response rate of 71.8 per cent. Data were collected in the summer of 1993. Intent to stay was used as a proxy for employee turnover.

*Definition*

General training is the extent to which an employee has the ability to increase the productivity of different organizations. This definition is based on the work of Becker (1964).

*Data collection*

Three questionnaire items were used to collect data about general training. The three items were preceded by the following lead-in statement: "Please indicate your agreement or disagreement with each of the following statements about your skills and knowledge in the company". The three questionnaire items were as follows:

- (1) The skills and knowledge used in my job are needed in other companies.
- (2) It would be difficult to use the skills and knowledge of my job outside of this company (R).
- (3) My job skills and knowledge are mostly limited to this company (R).

Five responses were provided for each of the items: "strongly agree, agree, neither agree nor disagree, disagree, and strongly disagree" (p. 279).

*Computation*

The first item was scored from five (for "strongly agree") to one (for "strongly disagree"). Since the second and third items were phrased negatively, their scoring was reversed. The scores were summed and divided by five. The mean and standard deviations are 3.45 and 1.04 respectively.

*Validity*

Two sets of data are pertinent to validity. General training was factor analysed along with the 20 other exogenous determinants of intent to stay. The three items loaded on a separate factor, with loadings of 0.75, 0.81, and 0.87. General

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training was hypothesized to decrease satisfaction and commitment, thereby negatively influencing intent to stay indirectly. The results indicate that general training positively influences satisfaction but decreases commitment. General training had no significant impact on intent to stay. Results contrary to predictions, therefore, were obtained for general training, satisfaction, and intent to stay.

*Reliability*

Coefficient alpha for the three items is 0.85.

*Comments*

Kim's study is a welcome addition to the literature. In addition to measuring general training without reliance on demographic variables, his study estimated a causal model in South Korea. This type of comparative study is very much needed, because organizational research is almost exclusively a western phenomenon. If organizational models are ever to be general, the data must be western *and* Asian.

Two comments are pertinent about Kim's definition. First, the focus on productivity in Kim's definition is closer to Becker's formulation of general training than the handbook's emphasis on transferability. The two formulations are quite similar, however. An individual will not be able to transfer his/her work ability between organizations unless the ability increases productivity in different organizations. It seems to be easier for most readers to grasp the idea of transferability than the idea of increasing the productivity of different organizations. Second, Kim's definition refers to ability to increase productivity. General training is typically defined in terms of "skills and knowledge" rather than ability. Kim's three questionnaire items, for instance, refer to skills and knowledge. The ability to increase productivity, of course, depends on skills and knowledge, so there is no inconsistency here. Reference to ability rather than skills and knowledge is also consistent with the handbook's preference for using a single term to define a concept. Multiple terms to define a concept often tap quite different ideas. This is not the case with knowledge and skills, because they are closely linked to work ability. Many times, however, the use of quite different terms to define a concept taps diverse ideas.

Kim used one positive and two negative items to collect data. One positive item was eliminated because of a low loading. To retain a balance between positive and negative items, another positive item should be designed.

The factor analysis provides the most important data about validity and the results strongly support the discriminant and convergent validity of the measures. The results for construct validity are not as clear cut. Economists only argue that general training increases turnover; they make no reference to satisfaction, commitment, and intent to stay. Kim thus hypothesizes some plausible linkages not specified by economists. The suggested linkages were not confirmed by the results – but the literature does not explicitly postulate these hypothesized linkages. It is also possible that the economists are wrong

about the impact of general training on turnover. They typically use demographic variables to measure general training and do not use extensive controls. Demographic variables typically lack validity and, without extensive controls, contaminating variables cannot be eliminated. Kim uses direct measures of general training and has extensive controls – and he found results contrary to his predictions. The handbook, therefore, partially discounts the material that Kim provides about construct validity. Results from the factor analysis strongly support the validity of Kim's measure of general training.

The results for reliability also strongly support the psychometric properties of Kim's measure.

*Source*

Kim (1996).

**Notes**

1. This definition is based on the work of Becker (1962, 1964, pp. 7-36).
2. There are considerable differences in the degree of general training among the professions. Physicians, for example, will be more generally trained than lawyers.
3. For an example see Price and Mueller (1981, 1986).
4. This idea was suggested by material about Japanese organizations (Ouchi, 1981; Pascale and Athos, 1981).
5. Some relevant data about the measurement of general training can be found in the following: Barnes and Jones (1974); Burton and Parker (1969); Mincer (1974); Pencavel (1970); Rees (1973); Sandell and Shapiro (1978).



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## 13. Ideology

### Definition

An ideology is a set of beliefs about the nature of an organization and its environment[1]. Illustrations of ideology are the theology of the Roman Catholic Church and Marxism-Leninism of the Communist Party of the former USSR. Theology and Marxism-Leninism contain more than beliefs about the nature of the church and party – the church’s theology, for instance, contains norms about the good life – but the core of theology and Marxism-Leninism consists of statements indicating the nature of these organizations and their environments. Material about ideology is also found in discussions of sagas, philosophies, corporate cultures, and creeds.

Ideologies differ in the extent of their development. Theology and Marxism-Leninism are very well-developed ideologies, because they offer extensive treatments of the nature of these organizations and their environments. Books are, of course, written describing Roman Catholic theology and Marxism-Leninism[2]. The grass-roots ideology of the Tennessee Valley Authority in Selznick’s famous study (1953) seems to have been quite well developed. Some Japanese business firms (Ouchi, 1981; Pascal and Athos, 1981) also appear to have quite well-developed ideologies, which they commonly term “philosophies”. Ideological development seems to be correlated with effectiveness: the more effective the organization, the more developed its ideology. The typical organization evidences little or no ideological development.

The study of ideology is not a major concern among organizational scholars. Selznick and Clark (Clark, 1956; 1960; 1970; Selznick, 1953) have, of course, provided a substantial body of empirical organizational data about ideology. Bendix’s (1956) study of managerial ideology is a classic in the field. The empirical research of Sutton and his colleagues (1956) on the ideology of US business[3] is the basis of the handbook’s definition. These scholars have produced a considerable amount of literature, but it does not compare with the massive production of research about satisfaction and commitment – to cite but two examples. Comparatively speaking, few organizational scholars are interested in ideology.

The 1972 edition of the handbook had no chapter on ideology. Popular literature about organizational philosophy in the late 1970s and 1980s (Ouchi, 1981; Pascale and Athos, 1981; Peters and Waterman, 1982) reminded the handbook about ideology’s importance and resulted in the inclusion of a chapter on ideology in the 1986 edition. The present edition continues the discussion of ideology in the hope that more organizational scholars will focus on the topic[4]. This is another place where the handbook does not seek merely to represent the concerns of the field accurately, but to suggest new directions for research.

### **Measurement**

The handbook is impressed by Selznick and Clark's previously-cited research on ideology. Selznick (1953) initiated the research with his *TVA and the Grass Roots* and Clark continued with his studies of organizations of higher education. Any research performed on ideology must take into account Selznick and Clark's work. What is also impressive, however, is that Selznick and his colleagues, despite their concern with ideology for many years, never developed a measure of the concept. Based on their considerable acquaintance with the organizations they studied, derived mostly from intensive field work, they formed impressions of the content of the organization's ideologies. The impressions, though probably quite accurate, were never systematically checked by a measure.

Unlike the other chapters, no selection from the empirical literature is available for ideology. What the handbook does is to suggest a scale for ideology's measurement. Most of the items in the scale come from, or were suggested by, a study of the popular organizational literature previously cited[5].

#### *A suggested scale*

The core of the scale is 11 descriptive statements, preceded by the sentence: "To what extent do the following statements *accurately describe* the organization for which you work?" The statements are as follows:

- (1) My organization views itself as distinctive.
- (2) My organization has definite ideas about how things should be done.
- (3) My organization has an ideal kind of employee that it prefers to hire.
- (4) My organization sees its mission as something special.
- (5) My organization highly prizes tradition.
- (6) My organization has a clear view about how to achieve its mission.
- (7) Stories are told within my organization about the accomplishments of past employees.
- (8) My organization has its own song.
- (9) A trademark of my organization is its preference for a special style of management.
- (10) My organization has a clear vision of its place in society.
- (11) Sayings are often told within my organization which embody the wisdom of its way of doing things.

Each of the 11 statements has five responses: very accurate, quite accurate, somewhat accurate, somewhat inaccurate, and very inaccurate. Scoring ranges from five to one, with "very accurate" scored as five and "very inaccurate" scored as one. The scores should be summed and divided by 11. A high score thus indicates a well developed ideology, such as one would find for the

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theology of the Roman Catholic Church or for Marxism-Leninism in the Communist Party of the former USSR. The proposed scale has not been used, so the handbook can offer no data regarding its validity and reliability.

#### Notes

1. This definition is based on the work of Sutton and his colleagues (1956, pp. 1-15). Sutton *et al.* view ideology as a component of culture, as does Parsons. A discussion of the Parsonian idea of culture as symbols is found in Johnson (1960, pp. 82-109). The following sources provide Parsonian-type discussions of ideology: Geertz (1964, 1973, pp. 193-233); Johnson (1968); and Shils (1968).

The term "culture" is widely used in contemporary research on organizations. A prominent example is "absence culture" (Rhodes and Steers 1990). The Parsonian idea of culture used by the handbook is narrower than contemporary organizational use, which implicitly views culture as ideas, behaviour, and artefacts. Culture as symbols only refers to ideas. The concepts of the handbook include all the key ideas encompassed by the contemporary use of culture by organizational scholars – thus separate chapters are not required for culture.

2. The theology of the various Protestant denominations would be as good an example of theology as that provided by the Roman Catholic Church. Organizational scholars have long had a special interest in the Roman Catholic Church as an object of study, and the author of this handbook shares this interest.
3. Writers in the Marxist tradition also have evidenced a major concern with ideology, with Mannheim's (1936) *Ideology and Utopia* being the first major sociological work dealing with ideology in this tradition. Most of the Marxist work, however, is not focused on organizations, and is thus not cited in the handbook. Selznick is especially well informed about Marxism; his study (1952) of the Communist Party is still cited in discussions of the topic. Although mostly a Weberian scholar, Bendix is also well informed about Marxism. A general work on ideology in the Marxist tradition is McClelland (1986).
4. The recent research by Kunda (1992) is encouraging, since it has a strong focus on ideology.
5. The existence in an organization of full-time specialists in ideology is a clue to ideology's importance to the organization. Theologians in the Roman Catholic Church are an example of full-time specialists in ideology. Line managers, such as priests in the church, are seldom heavily involved in the development of an ideology. The managers propagate the ideology, but they do not usually develop it. The Communist Party in the former USSR, also appears to have had full-time specialists in ideology, especially at the higher levels (Hough, 1969).

## 14. Innovation

### Definition

Innovation is the degree to which changes are intentionally implemented that are new to the organization[1]. Three aspects of this definition require emphasis. First, the idea of degree is included to explore and measure the depth of innovation. Some organizations innovate throughout the system, whereas others innovate more narrowly. The organization that hires a few very visible African Americans must be distinguished from the organization that recruits many African American employees at all levels. Second, innovation is a less general concept than organizational change; the idea of "intentional" change conveys this distinction. Only change that is intentionally implemented is innovation. Third, the production of "new ideas" is not innovation; ideas must be *implemented* for innovation to occur. A research and development unit, for instance, is commonly evaluated not by its production of books and articles, which are likely to contain the new ideas, but by the extent to which new processes and products are introduced by the organization.

Administrative innovation is distinguished from technological innovation[2]. The earlier discussion of administrative intensity distinguished management of output from direct production of output. Administrative innovation involves changes in management, whereas technological innovation involves changes in production. Changes in decision making, co-ordinating, and controlling are illustrations of administrative innovation, whereas changes in the process of production or in the product itself are illustrations of technological innovation. This distinction represents a dimensional approach to innovation based on the assumption that the determinants and impacts of these types of innovation may be different.

Innovation is a general concept that includes both administrative and technological components. Intentionally implemented changes that are new to the organization include both changes in management and changes in production. Management and production changes are subsets of the more general concept of innovation. As was indicated previously in the discussion of Meyer and Allen's work on commitment, and will be illustrated later in the handbook, the "dimensions" of a concept are often not true dimensions but different definitions of the concept. Administrative and technological innovations are true dimensions of innovation.

### Measurement

The measurement of innovation has been approached by asking employees about their *willingness* to innovate (Price, 1972b, pp. 118-28) and through the study of specific innovations. Asking employees about their willingness to innovate results in general measures of innovation, and such information can be obtained by interviews and questionnaires. Data about specific innovations have been collected by interviews, questionnaires, observations, and documents.

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The first selection, by Lewis-Beck (1977), takes the general approach to the measurement of innovation. Rather than assessing willingness to innovate, however, Lewis-Beck used informed observers to report on innovation. While not novel, this approach represents a relatively little-used and promising strategy to measure innovation. The second selection, by Moch and Morse (1977), takes a specific approach to the measurement of innovation. Moch and Morse used questionnaires to study hospital innovation. The specific approach does not yield standardized and general measures, but it can be combined with a revised Lewis-Beck approach to produce such measures, as the final section of the chapter will suggest.

### **Lewis-Beck (1977)**

#### *Description*

This study focused on the impact of influence equalization on organization innovation. The organizations sampled for analysis were 32 hospitals, predominantly public ones, representing all the hospitals in Peru. Interviews were conducted in 1972 with a probability sample of health professionals (95 per cent of whom were directors, doctors, or nurses) in each of the 32 hospitals. Of those eligible, 94 per cent were interviewed, for a total of 543 interviews. Public hospitals are in the majority in Peru, containing 85 per cent of the nation's hospital beds.

#### *Definition*

Innovation is defined as "the adoption of new procedures, practices, and equipment by the hospital" (p. 2). This conceptualization is influenced by the work of Mohr (1969).

#### *Data collection*[3]

Three Likert-type questionnaire items were used to assess the innovativeness of the hospitals:

- (1) This hospital is a little behind in utilizing the most adequate equipment and medicines.
- (2) The hospital has not introduced any new methods and techniques of patient care.
- (3) This hospital is very behind in the application of new administrative techniques to the work of admitting, maintaining, and releasing patients" (p. 4).

Each question had a five-point "strongly agree" to "strongly disagree" response format.

#### *Calculation*

Each item was scored from five for "strongly agree" to one for "strongly disagree". The larger the score, the greater the innovation reported by the

respondent. Within a hospital, individual scores on an item were averaged and then summed across the three items to give the hospital an innovation score. The mean innovation score is 9.29 and the standard deviation is 1.78.

*Validity*

Two sets of data are pertinent for assessing validity. First, as expected, and indicative of construct validity, equalization of influence over decisions is especially likely to lead to adoption of innovations when the hospitals have relatively ample resources at their disposal. Second, the measure of innovation has a high positive correlation ( $r = 0.62$ ) with modernity of the regions of the country. The three basic regions of Peru are commonly ranked, with regard to modernity, in ascending order from the Andes to the coast to the capital, Lima. This data about modernity argues for criterion-related validity of the measure of innovation.

*Reliability*

No data are provided about reliability.

*Comments*

There is discussion in the organizational literature concerning the extent to which findings from developed nations can be applied to developing nations[4]. Lewis-Beck's Peruvian sample suggests a positive response to this question and is thus a welcome addition to the literature.

Lewis-Beck's definition is basically the same as the handbook's. This is not surprising, since the work of Mohr (1969) is important for Lewis-Beck and for the handbook. Although he does not make the distinction, it is interesting to note that Lewis-Beck's first two questionnaire items assess technological innovation, whereas his third item measures administrative innovation.

Three points are important regarding data collection. First, the handbook is intrigued by Lewis-Beck's interview strategy for measuring innovation. He used the obvious but neglected strategy to measure innovation: he asked informed observers to report on it. It is also important to stress that Lewis-Beck asked a number of respondents from each hospital to report on innovation; the average number of informants per hospital is slightly over 17. Researchers (Seidler, 1974) have stressed the importance of using a number of informants to collect valid and reliable data. Second, response-set bias may be a problem with Lewis-Beck's questions, since all of them are stated negatively. Future research with this type of question should randomly order both positive and negative items. Third, there is nothing in Lewis-Beck's report about how the translations were handled. Since Spanish is generally spoken in Peru, there will be problems in obtaining a Spanish equivalent to the English questionnaire. Ko's (1996) discussion of the problems of translating English into Korean, cited in Chapter 4 on commitment, is a model of how to handle the translation problem.

The provision of descriptive statistics is appreciated. Too often the basic data are not provided in research reports. Although not extensive, the evidence

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supports the validity of Lewis-Beck's measure of innovation. Conclusions about the measure, however, would have been facilitated by the provision of data about reliability.

*Source*

Lewis-Beck (1977).

**Moch and Morse (1977)**

*Description*

This study investigated the structural determinants of innovation in organizations. The sample for the study consisted of 485 proprietary, voluntary, and local public hospitals in the USA. No federal hospitals were included.

*Definition*

Medical and administrative innovations are the dimensions of innovation investigated. Neither of these two dimensions, nor innovation itself, is explicitly defined.

*Data collection*

Data about medical and administrative innovations were collected by questionnaires mailed to the chief medical officer and chief administrative officer of each hospital. The use of 12 new technologies for the treatment of respiratory disease was the measure of medical innovation. Selection of these 12 new technologies was made in consultation with experts in the area. Adoption of electronic data processing (EDP) was the measure of administrative innovation. EDP could be used by the hospitals for eight functions: accounting, admissions, discharges, personnel records, payroll, medical records, research, and patient care. The questionnaire items used to collect the data about respiratory disease and EDP are not reproduced in the article.

*Calculation*

Each of the 12 new technologies for the treatment of respiratory disease was scored for adoption or non-adoption. The greater the number of adoptions by a hospital, the higher its score on medical innovation. The greater the number of functions performed by EDP, the higher the score of the hospital on administrative innovation. Means and standard deviations are not provided for the measures of medical innovation and administrative innovation.

*Validity*

Two sets of data are relevant for validity. First, when visiting the hospitals, the researchers asked the chief administrative officers for records-based data to check the adoption of the 12 new technologies. The researchers appear to have been satisfied with the responses of the chief administrative officers to these requests for records-based data. No requests appear to have been made for comparable data about EDP, the measure of administrative innovation. Second,

based on a review of the literature, a causal model of innovation was estimated. Its critical determinants are size, specialization, differentiation, and centralization. Most of the findings agree with expectations. Adoption of innovations compatible with the interests of lower-level decision makers, such as department heads, occurs more frequently in large, specialized, differentiated, and decentralized hospitals. Centralization does not appear to influence adoption of innovations that are not compatible with the interests of lower-level decision makers. Contrary to expectations, however, the findings indicate that differentiation facilitates the adoption of innovations that are not compatible with the interests of lower-level decision makers. The findings, therefore, basically support construct validity for the measures of medical and administrative innovation.

*Reliability*

The reliability of the measure is assessed in two ways. First, both the chief medical officer and the chief administrative officer were asked about the adoption or non-adoption of the 12 new technologies for the treatment of respiratory disease[5]. The product-moment correlation between the adoption measures based on these two reports is 0.78 (p. 720). In reporting the same event, these two chief executives thus mostly agreed with each other. A comparative measure of reliability is not reported for EDP[6]. Second, the researchers visited 16 hospitals to determine for themselves whether or not the 12 new technologies were adopted. The correlations between data collected by the researchers and the reports of the chief medical officers and the chief administrative officers are 0.86 and 0.75, respectively (p. 720). Again, comparable data are not reported for the measure of administrative innovation (EDP).

*Comments*

Moch and Morse are to be commended for their *N* of 450. Even the Aston Group and Blau did not have *N*s this large.

The researchers should have explicitly defined innovation and its dimensions. It is not too difficult to abstract the implied definitions of medical and administrative innovation from the examples described, but definition should not be the responsibility of the reader. Medical and administrative innovation seem to correspond to the handbook's technological and administrative innovation respectively. Use of the two dimensions is excellent, since the determinants of medical innovation may be different from the determinants of administrative innovation.

The handbook is concerned about collecting data from high officials regarding internal operations of the organization. Since they are often primarily oriented to the environment, these high officials, especially the chief executive officers, are likely to be relatively uninformed about detailed, internal operations. In this study, there is the additional problem of bias with respect to innovation. High officials will have an incentive to overreport the use of these types of innovations in order to demonstrate that they are managing "good



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hospitals". On the other hand, Moch and Morse asked the chief medical officers and the chief administrative officers to report on activities that they should know about. The chief medical officers should know about major innovations regarding respiratory disease, and the chief administrative officers should know about major innovations regarding EDP. Much to their credit, the researchers also checked the accuracy of the reports about medical innovation by visiting 16 hospitals. Information based on records was also obtained during these visits, an important additional way to assess validity. It would have been even better for the 16 hospitals to have been selected randomly and for checks to have also been made regarding EDP. Random selection, however, would probably have been very expensive. In short, the handbook has no major concerns with data collection in this study and especially applauds the visits to the 16 hospitals.

The researchers do not reproduce their instrument. This would be especially helpful for EDP, since most of the eight functions described could be partially computerized. It would be instructive to examine the questionnaire items for EDP to see how carefully the issue of degree of computerization was examined. Without the instrument, other researchers cannot replicate this study. The handbook is well aware, however, of editorial constraints on the reproduction of instruments and will treat this issue in the concluding chapter.

The scoring, especially for medical innovation, is not clear and descriptive statistics are not provided.

Five comments are pertinent regarding validity and reliability. First, there is the issue of the extent to which innovations in the treatment of respiratory disease are representative of medical innovation. The treatment of respiratory disease is but one part of the medical technology of a hospital. Moch and Morse have made a good case for convergent and construct validity of their measure of innovations in the treatment of respiratory disease; they do not, however, address the issue of representativeness. Second, there is the issue of the extent to which medical innovation is representative of general hospital innovation. In addition to medical innovation, hospitals also innovate in the area of nursing technology. A study of technological innovation in hospitals, to use the handbook's terminology, must examine both medical and nursing innovation. These researchers do not mention nursing innovation. Third, there is the extent to which innovations regarding the treatment of respiratory disease are representative of a general concept of organizational innovation. The issue should be addressed. These three comments reflect a general lack of conceptual precision in the article. Fourth, Moch and Morse carefully checked the validity of the measure of medical innovation by visiting 16 hospitals. Since no comparable check was made for administrative innovation (EDP), its validity cannot be assessed. Fifth, the researchers provide data supportive of the reliability of the measure.

*Source*

Moch and Morse (1977).

### **Development of a general measure of information**

This chapter has presented both a general and specific measure of innovation. A general measure is preferred because it promotes theory construction by making comparisons easier among studies. Specific measures, however, are valuable because they provide different ways to estimate propositions and assess what is idiosyncratic about organizations. This note proposes some improvements in Lewis-Beck's general measure and indicates how the improved instrument can be used with Moch and Morse's specific measure to develop a valid and reliable general assessment of innovation. Consider first the general measure. Although either questionnaires or interviews can be used to collect these data, the handbook will assume the use of questionnaires. This part of the proposed strategy is stimulated by Lewis-Beck's study.

Technological and administrative innovation should first be defined and illustrated for the respondents, with both the definitions and the illustrations being brief. It probably is not necessary to define the general concept of innovation for respondents, because it will be implied in the material about technological and administrative innovation.

A set of global questions should be constructed for technological and administrative innovation. Four points are essential with regard to these questions. First, the questions should be asked of all employees. This will assess the extensiveness of innovations and avoid the possible bias of asking major administrators about the degree to which the organizations they direct are progressive. It is difficult for many administrators to say that their organizations are not innovative, since to be innovative is to be progressive. Second, the questions should focus on "minor", "major", and "neither minor nor major" innovations. There will naturally be some looseness in the respondents' interpretation of these terms, but it is necessary to attempt to assess, however crudely, the degree to which the organization is modified by the innovations. Third, the questions should be stated positively and negatively and the sequencing of the items should be random. Fourth, the global format means that questions will not be asked about specific innovations. The goal is to have a measure of innovation that can be used in any organization. The global format is used extensively in the study of satisfaction, so it should be applicable to innovation. The handbook has not attempted to construct this set of global questions, so no examples can be provided.

The only scoring issue to be addressed is whether or not different weights should be assigned for "minor", "major", and "neither minor nor major" innovations. Although it seems logical to assign more weight to major than to minor innovations, research will have to be undertaken to determine the implications of weighting.

The second part of the suggested strategy is the use of specific measures to check the validity of global measures of innovation. This part of the strategy is stimulated by the study of innovation by Moch and Morse.

Moch and Morse collected their hospital-specific data by questionnaires, a procedure that is perfectly agreeable to the handbook. Specific data could also

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be collected, however, from records and from observations. The exact procedure used is not the issue; what is critical is checking the *general* data with information about *specific* innovations. The general and specific data should naturally be collected from the same organizations.

The goal is to obtain a valid and reliable set of general measures of innovation. The handbook is suggesting that to do so it will be necessary to check the general measure with specific data from different types of organizations. It will also be necessary to use different types of specific data (questionnaires, records, and observations) to check the general data. The handbook understands the value of specific measures, but if at all possible the preference is to obtain standardized, general measures.

**Notes**

1. This definition is based on the work of Mohr. See, for example, Mohr (1969) and Downs and Mohr (1976). The handbook has enormously benefitted from Hage's (1980) career-long focus on innovation. Few organizational scholars have focused so intensively or profitably on a topic as Hage has on innovation.
2. This distinction comes from the work of Evan and Black (1967). Damanpour and his colleagues (Damanpour and Evan, 1984; Damanpour and Childers, 1985; Damanpour, 1987) also use this distinction.
3. Data in this section were supplied by Professor Lewis-Beck.
4. Lewis-Beck cites some of this literature in his article.
5. It is not clear from the report if both the chief medical officer and the chief administrative officer were also asked about the adoption of electronic data processing (EDP).
6. This lack of information leads the handbook to believe that the chief medical officer and the chief administrative officer were not both asked about the adoption of EDP.

## 15. Internal labour market

### **Definition**

An internal labour market exists to the degree that vacancies are filled from within the organization[1]. Such a market is commonly termed a “firm internal labour market”. Vacancies cannot be filled totally from within, because an organization is not a community and does not grow its own members. However, organizations vary considerably by the extent to which they recruit from within and this conceptualization captures a core element in the literature about internal labour markets. Internal labour market is a new concept for the handbook.

This definition can be linked to traditional terminology used to discuss internal labour markets. Five links are germane.

- (1) One way to establish an internal labour market is through the creation of a series of job ladders. In a university, for instance, instructor, assistant professor, associate professor, and professor constitute a job ladder. However, new employees are often recruited from outside the university for different steps on the job ladder. And, of course, job ladders do not exist for many employees. Job ladders are important, but they are not the same as internal recruitment.
- (2) The more fully an organization establishes an internal labour market, the more its employees are protected from outside competition when vacancies occur. This protection occurs because the organization first looks within to fill vacancies, though more qualified candidates may exist outside the organization. Protection will be a key feature of internal recruitment.
- (3) The existence of a strong internal labour market does not mean that all new employees enter through a port of entry position. If an organization has a series of job ladders, for instance, entry can be through the bottoms of these different ladders. All new employees thus do not come through a single port of entry at the bottom of the organization. A high degree of internal recruitment is not equivalent to the use of a port of entry position for all new employees.
- (4) The existence of a strong internal labour market means that there will be a large amount of vertical mobility within the organization. A sizeable amount of this mobility will, of course, be through job ladders. However, much of this mobility may have no connection to job ladders. Japanese business organizations, for example, practice almost exclusive internal recruitment without strong reliance on job ladders (Abegglen and Stalk, 1985; Dore, 1973).
- (5) Seniority will be strongly emphasized when there is a high degree of internal recruitment. However, merit can also be used extensively. A

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vacancy can, for instance, be filled by recruiting several seniority-levels down rather than recruiting from the next seniority-level down. Seniority should not be equated with internal recruitment.

Internal labour  
market

### **Measurement**

Two selections are used for this chapter, each embodying a somewhat different approach to the measurement of an internal labour market. The first selection is from the often-used National Organizations Study (NOS) which asks a single informant, by telephone survey, questions that deal mostly with reports of organizational practices. The second selection, by Iverson and Roy (1994), asked everyone in their sample questions which focus on perceptions of promotional opportunities.

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405

### **Kalleberg *et al.* (1996)**

#### *Description*

The National Organizations Study (NOS) was first used in the chapter on administrative intensity and the descriptive information provided in that chapter need not be repeated. As previously indicated, the focus in this chapter is the NOS material about an internal labour market, what the NOS terms a “firm internal labour market (FILM)”.

#### *Definition*

Following Doeringer and Piore (1971, pp. 1-2), a firm internal labour market (FILM) is defined as “an administrative unit ...within which the pricing and allocation of labour is... governed by a set of rules and procedures” (p. 89). Three aspects of FILMS are emphasized: the existence of job ladders; entry at the bottoms of the ladders; and movement up the ladders. The assumption is that these three aspects of FILMS vary together.

#### *Data collection*

Three questions were asked of the informant (p. 94). The first two questions were as follows:

- (1) Do you sometimes fill [occupation] vacancies with people already employed at [establishment].
- (2) Are there different grades/levels of [occupation]?

“Occupation” has three references: core occupation, general social survey (GSS) occupation, and managerial/administrative occupations. Core occupation consisted of occupations, as perceived by the informant, which directly produced the organization’s main good or service (p. 52). “Occupation” also refers to the occupation of the GSS respondent who had nominated the informant for the NOS (p. 53).

Organizations in the NOS, it may be recalled from the chapter on administrative intensity, were nominated by respondents in the National Opinion Research Center’s GSS. The third reference for occupation is

managerial and administrative positions. The NOS's informant knew the composition of these three types of occupations. "Establishment" is, of course, the organization that participated in the NOS. "Yes" or "No" answers were provided for the informant.

The third question asked the informant was as follows:

- (3) Is it possible for a [occupation] to be promoted to a level above [occupation]? How often does this happen?

Two occupations were provided, "core occupations" and "GSS occupations". Managerial and administrative occupations were excluded from the third question. The responses provided ranged from "not at all" to "very often".

#### *Computation*

The three questions asked provided eight items for the measure of an internal labour market, the three occupations for the first two questions and the two occupations for the third question. All items were recoded to a one to four scale prior to computing the scale score, with high score indicating the presence of an internal labour market. Scores for missing responses were imputed if the respondents answered six or more of the other items. The unweighted and weighted means and standard deviations are 2.55/0.91 and 1.39/0.72, respectively (p. 94). The unweighted and weighted scores refer to individuals and establishments respectively.

#### *Validity*

FILMS are a major concern of the NOS and findings are located at different places in the report of this study. However, the major findings are briefly summarized at the end of the report (pp. 328-32)[2]. FILMS are most likely to be found in large, formalized organizations that are branches of firms. Organizations that produce products rather than services are more likely to have FILMS; organizations that produce both goods and services are especially likely to have FILMS. As a human resource policy and practice, FILMS are correlated with high organizational performance. FILMS are also correlated with the existence of formal, job-training programmes. The more extensive the FILM, the more probable are its job-training programmes to be a means for blue-collar employees to advance into higher positions. Organizations with FILMS have less earnings inequality between different kinds of occupations. Since all of these findings are anticipated, they constitute data supporting the construct validity of the measure of a FILM.

#### *Reliability*

Cronbach's alpha for the FILM measure is 0.84.

#### *Comments*

The handbook has a narrower view of an internal labour market than the NOS. Of the three questions used to collect data about FILMS, only the first directly

assess the handbook's view of an internal labour market. The second question is not related to the handbook's view, whereas the third question collects some relevant data. As a general rule, the handbook attempts to avoid the type of clustering assumed by the NOS, namely, that the existence of job ladders is correlated with entry ports at the bottom and movement up the ladder. Different components of a cluster, from the handbook's point of view, might vary independently and have different consequences for the organization. However, in this instance, the clustering is supported by the data about reliability.

Two comments are relevant to data collection. First, given the collection of data from a single informant – probably a high executive in the department of human resource management – the complicated collection procedure used makes sense. This informant, for example, would understand the meaning of the different types of occupations about which information was requested. However, it will be difficult to use this means of data collection more widely. Most studies of FILM use samples of employees rather than a single informant, and these studies will find it difficult to use the NOS's complicated procedure. A modified version of Iverson and Roy's procedure – the second selection – may find more widespread use. Second, all of the responses should have been provided for the third question. The report merely notes that the answers ranged from "not at all" to "very often". The telephone interview schedule provides a different set of responses ("very often", "often", and "not very often"). So there is some ambiguity at this point.

It is not clear how the "yes" and "no" responses for the first two questions were recoded to a one to four scale. One can guess but the precise scoring information should have been provided.

What is most important about this measure is that it has good psychometric properties. A FILM was defined and measures constructed to collect data relevant to the definition. The measures were appropriate to the data-collection strategy used. Minor problems exist with the data collection and computation, but the measures are of high quality and provide a good base on which to build. Kalleberg has long been concerned with internal labour markets, and this concern has produced a quality measure.

*Source*

Kalleberg *et al.* (1996).

### **Iverson and Roy (1994)**

#### *Description*

The purpose of this study was to explain behavioural commitment, defined as "...an employee's intention to stay with an organization" (p. 19). Behavioural commitment was explained by a causal model proposed by Iverson and Roy.

The site for this research was a pulp and paper manufacturer located in the state of Victoria, Australia; 246 full-time, male, blue-collar employees constituted the sample. Skilled ( $N = 57$ ), semi-skilled ( $N = 140$ ), and unskilled ( $N = 12$ ) employees were included in the sample. The 246 employees represented a 32 per cent response rate for the questionnaire used to collect the data.

Iverson and Roy's data about promotional opportunity is what is relevant to internal labour markets. Promotional opportunity is a hypothesized determinant of behavioural commitment and is linked to internal labour markets by Iverson and Roy (p. 23).

*Definition*

Promotional opportunity is defined as "the movement between different status levels within an organization" (p. 20).

*Data collection*

Six questionnaire items were used to collect information about promotional opportunity. Before the six items were listed, the following lead-in was provided for the respondent: "How much do you agree or disagree with each of the following statements about the *prospects for promotion* for a person with your qualifications somewhere in the APM?" The six items were as follows:

- (1) Promotions are regular.
- (2) Promotions are infrequent.
- (3) There is an opportunity for advancement.
- (4) There is a very good opportunity for advancement.
- (5) Promotions are very rare.
- (6) There is a good chance to get ahead.

Five responses were provided for each of the six questions: "strongly agree, agree, undecided, disagree, and strongly disagree". "APM", of course, refers to the organization studied by Iverson and Roy. (These six items come from question 48 on the questionnaire.)

*Computation*

The five responses were scored from five to one, with "strongly agree" scored as five. Each of the five items were summed to create a total score. The means and standard deviation are 16.39 and 5.35 respectively.

*Validity*

Two sets of data are pertinent for validity. First, the LISREL analysis provided data to assess the measures' convergent and discriminant validity. In testing for convergent validity, Iverson and Roy initially estimated the null model, then a one-factor model, and finally the hypothesized model[3]. The hypothesized model was found to fit the data significantly better than both the null and one-factor models. Iverson and Roy interpreted these results as providing data supporting the convergent validity of their measures. Discriminant validity was tested by evaluating the difference between two models: one which permitted the correlations between the concepts to be perfectly correlated and another which allowed the correlations between the concepts to be free. This analysis



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was carried out separately for each concept in the causal model. The results of the difference test confirmed the discriminant validity of the model. A normed comparative fit index (Bentler, 1990) of 0.91 is found for the measurement model. Promotional opportunity, it should be emphasized, was included in the LISREL analysis to assess convergent and discriminant validity. Second, Iverson and Roy hypothesized that promotional opportunity would positively influence behavioural commitment through satisfaction. The positive impact on satisfaction is confirmed, but the indirect impact on behavioural commitment is not significant.

*Reliability*

Coefficient alpha for promotional opportunity is 0.86.

*Comments*

Although Australia is a western society, the study is a welcomed addition to the literature, since most of the data in the study of organizations come from Western Europe and the USA. The blue-collar sample is also appreciated, because recent studies of organizations seem to focus heavily on white-collar employees.

The handbook believes that promotional opportunity is one way to approach the measurement of an internal labour market. An organization in which the members perceive a good chance to get ahead – the Iverson and Roy measure – is probably an organization which has a high amount of upward, vertical mobility. And an organization with a high amount of upward, vertical mobility is likely to be an organization that fills its vacancies internally, the handbook's definition of an internal labour market. However, it is possible to have a substantial amount of promotional opportunity with some external recruitment. If an organization is expanding rapidly, for instance, there is likely to be a substantial amount of promotional opportunity with some external recruitment to hire needed personnel. Most of the time, however, where there is high promotional opportunity there will also be strong internal recruitment to fill vacancies.

Iverson and Roy have provided a good measure of promotional opportunity. The question is the extent to which promotional opportunity adequately assesses an internal labour market. Taking a clue from the NOS, it would have been better (from the perspective of the handbook) had Iverson and Roy directly asked their sample to gauge the extent to which their employer filled vacancies with people already employed. Three or four questions could have been constructed to assess different facets of internal recruitment. Future research should do this but should retain Iverson and Roy's measure of promotional opportunity, since it is a quality measure that appears to gauge, to a considerable extent, the extent of internal recruitment.

*Source*

Iverson and Roy (1994).

**Notes**

1. The following sources are among the many which contain helpful discussions of internal labour markets: Althauser (1989); Althauser and Kalleberg (1981); Baron *et al.* (1986); Kalleberg and Sorensen (1979); Osterman (1984); Pfeffer and Cohen (1984); and Villemez and Bridges (1988).
2. The findings are stated in correlational terms. However, the NOS intends these findings to be causal propositions (see especially pp. 90-3).
3. As has been indicated previously, the term "model" in LISREL is different from "model" as used in the handbook. The handbook uses the label of model to refer to a causal model, or theory.

### Definition

Involvement is the degree to which the employees of an organization are willing to work (Robinson *et al.*, 1969, p. 79). Individuals willing to work hard are highly involved, whereas individuals without this willingness are lowly involved. Data pertinent to involvement are also found in discussions of motivation, central life interests, the Protestant ethic, alienation, and burnout[1]. Reference is commonly made to “job involvement” rather than to involvement.

The distinction between involvement and satisfaction has long characterized the study of organizations, and the handbook uses this distinction. Satisfaction will be discussed in Chapter 23. The distinction between involvement and commitment is not well established, since commitment is a relatively new concept in the study of organizations. Satisfaction has been studied since the 1930s, whereas commitment only began to be a major focus in the 1970s, following the lead of Porter and his colleagues. There are, however, data supporting the distinctiveness of these three concepts (Brooke *et al.*, 1988; Mathieu and Farr, 1991), and the handbook assumes they are different ideas. Commitment was treated in Chapter 4.

Involvement is not the same as behaviour. An individual who states a strong willingness to work may not work hard, that is, he/she may not exert much effort in job performance. It is generally assumed, however, that involvement and behaviour are highly correlated, an assumption so widespread that involvement and behaviour are sometimes not distinguished. This plausible link with behaviour makes involvement pertinent to such classic organizational concerns as soldiering, restriction of output, and goldbricking. These classic organizational concerns, of course, refer to behaviour rather than to orientation.

Two dimensions of willingness to work are commonly made, to a specific job and to work in general. Most of the time, employees who are willing to work hard at a specific job will also be characterized by a general willingness to work hard, irrespective of the specific job. But the two dimensions may not always coexist. An employee with a general willingness to work hard may not exert much effort in a specific job owing to poor working conditions. The three selections in this chapter use these two dimensions of the willingness to work.

Some comments about alienation are in order. Kanungo’s review of the literature (1982) suggests that alienation and involvement refer to the same concept. The difference, according to Kanungo, is that alienation refers to the negative end of the conceptual continuum, whereas involvement refers to the positive end[2]. Kanungo prefers involvement and the handbook follows his preference[3]. The involvement label is also widely used in the field and does not have the negative connotation of alienation. As much as possible, the handbook seeks to avoid the use of labels with strong positive or negative connotations. The label of “administrative staff”, for example, was used in the chapter on

administrative intensity rather than “bureaucracy”, because of the negative connotations associated with the latter term.

### **Measurement**

The first two measurement selections illustrate different approaches to the measurement of involvement. Kanungo (1982), the first selection, uses the standard questionnaire approach, whereas Warr *et al.* (1979) use an interview approach. The handbook seeks to encourage different approaches to the measurement of concepts, so both selections are presented. Paullay and her colleagues (1994), the third selection, use the standard questionnaire approach, but offer a critique of Kanungo and make some additional conceptual distinctions.

### **Kanungo (1982)**

#### *Description*

The basic objective of this research was to define and offer a measure of involvement. To provide a clear definition, the literature was reviewed; to obtain a valid and reliable measure, an empirical study was conducted[4]. The sample for the study consisted of 703 full-time employees enrolled in undergraduate and graduate-level evening extension courses in three major universities in Montreal, Canada. In terms of demographic characteristics, the sample was heterogenous (p. 103).

#### *Definition*

Sociologists, according to Kanungo, typically refer to the concern in this chapter as “alienation”, whereas psychologists generally use the term “involvement” to identify their object of concern. Although referring to the same concept, alienation and involvement represent opposite ends of a continuum. Kanungo prefers the term involvement, and as previously indicated, the handbook follows his preference.

Involvement is defined as the “cognitive belief states” of employees and is distinguished from satisfaction and behaviour (pp. 76-7). “Psychological identification” is frequently used in place of cognitive belief states (pp. 84, 97). Two dimensions of involvement are set forth, those pertaining to a specific *job* and those pertaining to *work* in general (p. 79).

#### *Data collection*

Three different questionnaire formats were used to collect the data: Likert, semantic differential, and graphic. The handbook focuses only on the Likert format.

Ten questionnaire items were used to collect data about *job* involvement[5]. The following instructions preceded the ten items: “Below are a number of statements each of which you may agree or disagree with depending on your own personal evaluation of *your present job*. Please indicate the degree of your agreement or disagreement with each statement by putting a cross (X) mark in

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one of the six blanks representing the answer categories (strongly agree, agree, mildly agree, mildly disagree, disagree, and strongly disagree) that appear against the statement” (p. 169).

The ten items were as follows:

- (1) The most important things that happen to me involve my present job.
- (2) To me, my job is only a small part of who I am.
- (3) I am very much involved personally in my job.
- (4) I live, eat, and breathe my job.
- (5) Most of my interests are centred around my job.
- (6) I have very strong ties with my present job which would be very difficult to break.
- (7) Usually I feel detached from my job.
- (8) Most of my personal life goals are job-oriented.
- (9) I consider my job to be very central to my existence
- (10) I like to be absorbed in my job most of the time (pp. 169-70).

As indicated in the instructions, there were six possible responses provided for each item.

Six questionnaire items were used to collect data about *work* involvement[6]. The instructions preceding work involvement were the same as those preceding job involvement, except that the instructions for work involvement refer to “work in general” rather than to “your present job”.

The six items were as follows:

- (1) The most important things that happen in life involve work.
- (2) Work is something people should get involved in most of the time.
- (3) Work should be only a small part of one’s life.
- (4) Work should be considered central to life.
- (5) In my view, an individual’s personal life goals should be work-oriented.
- (6) Life is worth living only when people get absorbed in work (p. 173).

The same six possible responses were provided for each work involvement statement as were provided for job involvement.

#### *Calculation*

The scoring is not clearly indicated. The positive questionnaire items appear to have been scored from one to six, with “strongly agree” scored as six and “strongly disagree” scored as one[7]. Negative items were scored in a reverse manner. The key point, which is indicated by Kanungo, is that higher scores mean higher involvement. A scale was apparently constructed by summing the responses to the items. Means and standard deviations are provided for each item and for the scales. The means and standard deviations for the job

involvement and work involvement scales are 31.31, 10.61 and 20.70, 5.97 respectively (pp. 98-9).

*Validity*

Two sets of data are basic to validity[8]. First, the multitrait-multimethod procedure recommended by Campbell and Fiske (1959) was used to assess convergent and discriminant validity. Results from this procedure are in agreement with expectations (p. 109). Second, dimensionality was assessed by a principal components factor analysis followed by a varimax rotation. The factor analysis was performed for each of the three questionnaire formats: Likert, semantic differential, and graphic. Each analysis yields two clear interpretable factors for job and work involvement (pp. 113-14). Kanungo believes that the measures have satisfactory validity (p. 116).

*Reliability*

Three measures of reliability are available. First, the average item-total correlations for job and work involvement are 0.67 and 0.66 respectively (pp. 98-9)[9]. Second, for the entire sample ( $N = 703$ ), Cronbach Alphas of 0.87 and 0.75 respectively are reported for job and work involvement (p. 105). Third, for a sample of employees ( $N = 63$ ), taken within three weeks from administration of the questionnaires, test-retest coefficients of 0.85 and 0.67 are reported for job and work involvement respectively (p. 105). According to Kanungo, this is satisfactory reliability (p. 116).

*Comments*

A very impressive feature of Kanungo's research is his concern with both conceptual analysis and measurement. Seldom is a single study so careful in its treatment of both topics.

The handbook appreciates Kanungo's clear definition of involvement; his precise distinctions between involvement, satisfaction, and behaviour; and his specification of the dimensions of job and work involvement. This work clearly moves the study of involvement ahead. From the handbook's perspective, cognitive belief states correspond to involvement, since employees who have strong cognitive belief states are probably very willing to work. Since traditional research on involvement does not distinguish specific and general involvement (Kanungo's job and work involvement), Kanungo's dimensions are an improvement on most past research.

As previously indicated, Kanungo clearly distinguishes involvement from satisfaction. This is a sound distinction, but he frequently refers to involvement as "psychological identification" (pp. 84, 97). To many scholars, identification is very close in meaning to satisfaction. Clarity would have been improved if references to identification were dropped.

The use of three questionnaire formats to collect the data is impressive, since this provides for the assessment of validity in accordance with the procedure recommended by Campbell and Fiske (1959). Response-set bias, however, may

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be a problem. Eight of the ten Likert-type items for job involvement are positive; this ratio is five to six for work involvement. The preferred pattern is to distribute randomly an equal number of positive and negative items on the questionnaire.

The handbook appreciates the complete data about means and standard deviations. Instructions for the scoring, however, should have been more complete.

Kanungo believes that his measures possess “satisfactory psychometric properties” (p. 116). The literature which has used and critiqued his measures (Blau, 1985; Elloy and Terpening, 1992; Kanungo and Misra, 1988; Misra *et al.*, 1985; Paterson and O’Driscoll, 1989) generally corroborates his belief. A wider range of evidence for Kanungo’s measures is needed, however, since much of this corroborating literature is linked to him. The handbook agrees that Kanungo’s measures possess “satisfactory psychometric properties”.

*Source*

Kanungo (1982).

**Warr *et al.* (1979)**

*Description*

The purpose of this research was to develop measures of eight concepts pertinent to the quality of work life: work involvement, intrinsic job motivation, higher-order need strength, perceived intrinsic job characteristics, job satisfaction, life satisfaction, happiness, and self-rated anxiety. To develop these measures, two empirical studies were conducted on male blue-collar workers employed by manufacturing organizations located in the UK[10]. The *Ns* for the two studies were 200 and 390.

*Definition*

The concern of this handbook is with work involvement and intrinsic job motivation. Work involvement is defined as “the degree to which a person wants to be engaged in work” and intrinsic job motivation as “the degree to which a person wants to work well in his or her job in order to achieve intrinsic satisfaction” (p. 133). Work involvement focuses on *work in general*, whereas job motivation is concerned with the *specific job* presently occupied. Lodahl and Kejner’s (1965) research is the basis for work involvement, whereas Lawler’s (1969) research is the stimulus for intrinsic job motivation.

*Data collection*

The data were collected by interviews conducted in the respondents’ homes. An interviewer read the instructions and items, and the respondent selected an answer from the set of alternatives listed on a card. The interviewer then recorded the response in numerical form on an interview schedule.

For *work involvement*, the interviewer read the following material to the respondent: “For some people work is just a means to get money, it’s something

they have to put up with. For others, work is the centre of their life, something that really matters to them. I would first of all like to ask you about your reactions to work in general, and whether actually doing work is important to you personally. By 'work' I mean having a paid job. Here are some statements which people have made about work and working, in general. Without limiting yourself to your present job would you indicate on the scale [showcard 'W'] how strongly you agree or disagree with each comment in turn? Remember that I'm asking about paid jobs in general, not simply your present job" (p. 145).

The following six statements were read to the respondent:

- (1) Even if I won a great deal of money on the pools I would continue to work somewhere.
- (2) Having a job is very important to me.
- (3) I should hate to be on the dole.
- (4) I would soon get very bored if I had no work to do.
- (5) The most important things that happen to me involve work.
- (6) If unemployment benefits were really high I would still prefer to work (p. 145).

The following responses were on card W: "no, I strongly disagree; no, I disagree quite a lot; no, I disagree just a little; I'm not sure about this; yes, I agree just a little; yes, I agree quite a lot; yes, I strongly agree" (p. 147).

For *intrinsic job motivation* the interviewer read the following material to the respondent: "Now can we move a little closer to how you personally feel about your present job? Again I would like you to think about a number of statements that people have made about work, but this time think about your present job, not work in general. Please indicate on the same scale as before (showcard 'W') how strongly you agree or disagree with each comment. Remember that I'm asking now about your present job as a ... (insert title)" (p. 145).

The following six statements were read to the respondent:

- (1) I feel a sense of personal satisfaction when I do this job well.
- (2) My opinion of myself goes down when I do this job badly.
- (3) I take pride in doing my job as well as I can.
- (4) I feel unhappy when my work is not up to my usual standard.
- (5) I like to look back on the day's work with a sense of a job well done.
- (6) I try to think of ways of doing my job effectively (p. 145).

The responses on card W were used for both intrinsic job motivation and work involvement.

#### *Calculation*

Scoring was one to seven, with the most extreme disagreement scored as one and the most extreme agreement scored as seven. The seven items were



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summed to construct a scale score. More work involvement and more intrinsic job motivation are indicated by higher scores. For the first study, the means and standard deviations for work involvement and intrinsic job motivation are 31.77, 5.98 and 35.13, 5.46 respectively (p. 135). The equivalent statistics for the second study are 33.37, 5.86 and 36.82, 5.45 (p. 135).

#### *Validity*

Two sets of data are relevant to validity. First, there are the results of a factor analysis on six of the concepts studied. "The factor structure is remarkably consistent with expectations", according to Warr *et al.* (p.137). Second, there are agreements with existing results. For instance, the relationships between work involvement and intrinsic job motivation, on the one hand, and job satisfaction on the other hand, are in agreement with the literature. Both concepts are positively related (between 0.23 to 0.33) to job satisfaction (p. 142).

#### *Reliability*

Four pieces of data were used to assess reliability. First, coefficient alphas and test-retest scores are presented for work involvement and intrinsic job motivation. In the first study, the alphas for work involvement and intrinsic job motivation are 0.63 and 0.82 respectively. Equivalent alphas for the second study are 0.63 and 0.82. Second, item-total correlations are 0.38 and 0.59 for the first study for work involvement and intrinsic job motivation respectively[11]. For the second study these are 0.48 and 0.61. Third, 60 participants in the second study were interviewed six months after the original interviews to provide test-retest results. Coefficients of 0.56 and 0.65 are reported for work involvement and intrinsic job motivation respectively. Fourth, comparisons can be made between the results of the two studies. In general, the results for the two studies (means, standard deviations, coefficient alphas, item-total coefficients, and factor analyses) are consistent (pp. 135, 138-9). Warr and his colleagues believe that the psychometric properties of the measures "appear to be good" (p. 142).

#### *Comments*

The type of measurement research this article represents is significant and helps to move the study of organizations ahead. Researchers connected with the MRC Social and Applied Psychology Unit of the University of Sheffield in England have produced a series of these measurement pieces; their material previously appeared in Chapter 2 on absenteeism[12]. The only limitation of this research has been the emphasis on blue-collar workers; the study of white-collar workers is necessary to extend the generality of the Sheffield group's measures.

The handbook appreciates the distinction between work involvement and intrinsic job motivation; these concepts correspond to Kanungo's research on job involvement in the preceding selection. The handbook also appreciates the list of definitions (p. 33) provided by Warr *et al.*; it is a pleasure not to have to search for the conceptual distinctions. As indicated in the comments on

Kanungo's research, the handbook considers work involvement and intrinsic job motivation to be dimensions of involvement. The measures Warr *et al.* have advanced can be used to assess willingness to work.

Three points are germane to data collection. First, most organizational data are collected by questionnaire; it is, therefore, refreshing to encounter an interview study. The researchers indicate, however, that their measures can easily be adapted to a self-administered questionnaire format (p. 142). Second, the usual Likert format uses a series of agree-disagree responses with an intermediate response of neither agree nor disagree. The handbook believes the responses provided by Warr *et al.*, though using the basic Likert format, are an improvement over current practice. "I'm not sure about this" (the Warr *et al.* response) should be clearer to respondents than "neither agree nor disagree". Third, the handbook also appreciates the emphasis on developing simple measures; most researchers will avoid complicated measures.

The scoring instructions are clear, descriptive statistics are provided, and baseline data are included. These features of the research, while not extremely important, are missing in much organizational research.

The handbook agrees with Warr *et al.* that the measures generally appear to have good psychometric properties (p. 142). The use of cross validation is especially impressive. Results for validity and reliability are acceptable, but work involvement is clearly less reliable than intrinsic job motivation. Six months is probably too long an interval for test-retest data, since genuine changes are likely to occur during this period. Questions of validity and reliability are probably so carefully treated in this research because it is a specialized measurement study. More of this type of specialized research is needed.

*Source*  
Warr *et al.* (1979).

**Paullay *et al.* (1994)**

*Description*

This study sought to clarify the relationships between two concepts, job involvement and work centrality, that have been confused and often used interchangeably in the literature. These concepts will be defined in the following section. Participants in the study were 313 human service employees at a state psychiatric hospital. The sample was composed of different occupational specialties: physicians; nurses; social workers; rehabilitation counsellors; occupational, recreational, and speech therapists; psychologists; dietitians; pharmacists; and mental health therapy aides.

*Definition*

Job involvement (JI) "...is defined as the degree to which one is cognitively preoccupied with, engaged in, and concerned with one's present job" (p. 225). Two components of job involvement are distinguished. Job involvement in the

role (JIR) is "...the degree to which one is engaged in the specific tasks that makes up one's job..." (p. 225), whereas job involvement in the setting (JIS) is "...the degree to which one finds carrying out the tasks of one's job in the present job environment to be engaging" (p. 225). Job involvement is at the maximum when an individual is engaged in both components. Work centrality (WC) are "...the beliefs that individuals have regarding the degree of importance that work plays in their lives" (p. 225). Components of work centrality are not distinguished. Paullay *et al.* also argue that work centrality will be equivalent to the Protestant work ethic (PWE).

*Data collection*[13]

Data were collected by questionnaires administered at staff meetings. Respondents were first instructed: "Write a number in the blank to the left of each statement below, based on this scale:

To what extent to you agree or disagree with the statement?

+-----+	+-----+	+-----+	+-----+	+-----+	+-----+	+-----+
1	2	3	4	5	6	7
Disagree			Neutral	Agree		

Enter *one* number in the blank to the left of each statement. Make certain that you use *low* numbers to indicate statements that you *disagree with* and *high* numbers to indicate statements that you *agree with*". The following statement then follows on the questionnaire, immediately below the instructions: "Statements 1-27 pertain to your attitudes toward your present job..." The 27 statements were:

- \_\_\_ (1) I don't mind spending a half hour past quitting time, if I can finish something I've been working on.
- \_\_\_ (2) Often when I am not at work, I find myself thinking about things that I have done or things that need to be done at work.
- \_\_\_ (3) I feel myself to be part of the team on which I work.
- \_\_\_ (4) Generally, I feel detached from the type of work that I do in my present job.
- \_\_\_ (5) This work environment really inspires the very best in me in the way of job performance.
- \_\_\_ (6) There is something about the team on which I work that makes me want to do my best.
- \_\_\_ (7) I'll stay overtime to finish something that I'm working on.
- \_\_\_ (8) I just do my own job and forget about such things as hospital parties or hospital activities.
- \_\_\_ (9) I enjoy doing things with my co-workers.
- \_\_\_ (10) I really feel as if the team's problems are my problems.

- \_\_\_ (11) I am willing to put in a great deal of effort beyond that normally expected in order to help the hospital be successful.
- \_\_\_ (12) Sometimes I lie awake at night thinking about the things I have to do the next day at work.
- \_\_\_ (13) In my current job I often do extra work that isn't required.
- \_\_\_ (14) I am absorbed in the type of work that I do in my present job.
- \_\_\_ (15) I'm really a perfectionist about the work that I do.
- \_\_\_ (16) In general I am involved in my "work environment" (for example, the team, or the hospital in general).
- \_\_\_ (17) If once a week, after the work day is over, the administration had the employees get together in groups for the purpose of discussing possible job changes or problems, I would remain after quitting time to participate in these discussions.
- \_\_\_ (18) If I had the choice between going to the hospital picnic or staying home, I would probably stay home.
- \_\_\_ (19) I am very much involved personally in the type of work that I do in my present job.
- \_\_\_ (20) I would prefer to work in a different setting or organization.
- \_\_\_ (21) At work, I am very involved in what goes on with others (for example, your co-workers or supervisor).
- \_\_\_ (22) I usually show up for work a little early to get things ready.
- \_\_\_ (23) I am extremely glad that I chose this hospital to work for, over the other places I was considering at the time I joined.
- \_\_\_ (24) I often try to think of ways of doing my job more effectively.
- \_\_\_ (25) I am really interested in my work.
- \_\_\_ (26) I do only what my job requires, no more no less.
- \_\_\_ (27) I am willing to put in a great deal of effort beyond that normally expected in order to help my team be successful.

If the 27 items have to be split between two pages because of their length, then, according to Paullay *et al.*, the diagram of the seven-point scale should be reproduced at the top of the second page.

The following statement then follows on the questionnaire, immediately below the 27 item: "Statements 28-39 refer to your attitudes toward *work in general...*":

- \_\_\_ (28) Work should only be a small part of one's life.
- \_\_\_ (29) In my view, an individual's personal life goals should be work oriented.
- \_\_\_ (30) Life is worth living only when people get absorbed in work.

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- \_\_\_ (31) The major satisfaction in my life comes from my work.
  - \_\_\_ (32) The most important things that happen to me involve my work.
  - \_\_\_ (33) I have other activities more important than my work.
  - \_\_\_ (34) Work should be considered central to life.
  - \_\_\_ (35) I would probably keep working even if I didn't need the money.
  - \_\_\_ (36) To me, my work is only a small part of who I am.
  - \_\_\_ (37) Most things in life are more important than work.
  - \_\_\_ (38) If unemployment benefit was really high, I would still prefer to work.
  - \_\_\_ (39) Overall, I consider work to be very central to my existence.

Involvement

**421**

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As with the 27 items, if items 28-39 have to be split between pages, the scoring scale should be reproduced.

The PWE was measured with four items from Blood's (1969) research.

#### *Computation*

The job involvement scale is composed of items 1-27 and the work centrality scale is composed of items 28-39. The job involvement-role (JIR) subscale consists of items 1, 2, 4, 7, 12, 13, 14, 15, 19, 22, 24, 25, and 26; the job involvement-setting (JIS) subscale contains items 3, 5, 6, 8, 9, 10, 11, 16, 17, 18, 20, 21, 23, and 27. The following items are reverse-scored: 4, 8, 18, 20, 26, 28, 33, 36, and 37.

To calculate a score for each scale, the numbers (ranging from 1-7) associated with each response across all items of the scale were summed. For example, to score the work centrality scale, sum the responses to items 28-39 were summed. High scores represent "more" of the construct in question and low scores represent "less" of the construct in question.

The means and standard deviations, respectively, for the five measures are as follows: JI (135.92 and 25.47), JIR (67.43 and 12.96), JIS (68.49 and 15.14), WC (46.45 and 11.60), and PWE (19.84 and 4.89).

#### *Validity*

Six "models" were included in the confirmatory factor analysis. As indicated previously, "models" refer not to theoretical models as used by the handbook, but to the measurement models of LISREL. Results indicate that the model that best fit the data consisted of job involvement in the role (JIR), job involvement in the section (JIS), Protestant work ethic (PWE), and work centrality (WC). The comparative-fit-index (0.99) and goodness-of-fit index (0.98) of this model is higher than those of the other five models. Three conclusions were drawn from the LISREL analysis. First, job involvement (JI) and work centrality (WC) are distinct concepts. Second, two types of job involvement are found, one pertaining to the role (JIR) and the other pertaining to the setting (JIS). Third,

work centrality and the Protestant work ethic (PWE) are different concepts. The first two results were predicted but the third was unanticipated.

*Reliability*

Coefficient alphas for the five measures are as follows: JI (0.91), JIR (0.84), JIS (0.87), WC (0.80), and PWE (0.62).

*Comments*

Three conceptual points are relevant. First, Paullay *et al.* did not attempt to include job involvement and work centrality in a more general concept, as does the handbook. What they did is a common practice, however. Second, Paullay *et al.*'s job involvement and work centrality correspond to the handbook's job and work involvement respectively. Kanungo and Warr *et al.* also make a similar distinction. Third, like Paullay *et al.*, the handbook assumed that the Protestant work ethic was the same as work involvement – work centrality to Paullay *et al.* If this result is replicated, then further conceptual distinctions must be made.

Three comments are pertinent to the instrument. First, the instrument will be too long for much research, especially if causal models are being estimated, but it can probably be shortened considerably without too much loss of measurement quality. Second, since the instrument was originally written for hospital employees, some of the job involvement items (8, 11, 16, 18, and 23) are specific to a hospital setting and will have to be modified. Third, some changes may also have to be made regarding the term "team" (3, 6, 10, and 27), since not all organizations make use of work teams.

The research was done carefully and the measures possess very acceptable psychometric properties. However, the research has two limitations from a psychometric perspective. First, the results from the confirmatory factor analysis would have been even more impressive had satisfaction and commitment been included in the analysis. It is impressive to demonstrate that job and work involvement – to use the handbook's terms – are different, but it would have been even more impressive to demonstrate that job involvement, work involvement, satisfaction, and commitment are different. It is critical to distinguish the two involvement concepts from satisfaction and commitment, because the four concepts refer to orientations. Second, although the results of the confirmatory factor analysis support the existence of two types of job involvement, pertaining to the role and setting, it is not demonstrated that these two types have different determinants and consequences for the organization. The existence of different determinants and consequences is what really demonstrates the distinctiveness of concepts, and until this demonstration is provided, judgement must be suspended regarding the value of the two types of job involvement[14]. One cannot expect a single study to do everything and Paullay *et al.* have demonstrated competently what they set out to do, that is, to indicate that job involvement and work centrality are different concepts.

*Source*

Paullay *et al.* (1994).

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**Notes**

1. "Burnout" is often treated as a separate concept by many researchers (Maslach and Jackson, 1981; Selzer and Numerof, 1988). The handbook has difficulty distinguishing burnout from depression and involvement; therefore, it is not treated as a separate concept. See Firth *et al.* (1986) and Meier (1983, 1984) for some pertinent data.
2. Alienation is used in more ways than Kanungo indicates. In his classic article, for example, Seeman (1959) discusses five different ways in which alienation is used: powerlessness, meaninglessness, normlessness, isolation, and self-estrangement. Other uses can be found in the literature (Blauner, 1964; Israel, 1971; Schacht, 1970).
3. Kanungo, however, entitles his book *Work Alienation* rather than *Work Involvement*.
4. Three other studies are cited (pp. 118-52) which mostly provide data supporting the distinction between job and work involvement.
5. These ten items were included in a section with five filler items (pp. 169-70). The filler items are not included in the handbook.
6. These six items were included in a section with five filler items (p. 173). The filler items are not included in the handbook.
7. The scoring could run from zero to five rather than from one to six.
8. The multitrait-multimethod matrix described in this paragraph was also reanalysed by Kanungo using analysis of variance.
9. Some scholars consider item-total correlations to be assessments of validity.
10. Additional demographic characteristics of the workers are also provided (p. 134).
11. See Note 9.
12. Cook *et al.* (1981) is also a major measurement work produced by the Sheffield unit.
13. Dr Paullay graciously provided this instrument and its scoring for inclusion in the handbook.
14. It should also be noted that the handbook distinguishes job and work involvement without demonstrating that these concepts have different determinants and/or consequences for the organization. The distinctions are commonly made, but the handbook could locate no literature supporting these distinctions.

## 17. Justice

### **Definition**

Two dimensions of justice are commonly distinguished, distributive and procedural. Distributive justice is the degree to which rewards and punishments are related to performance inputs[1]. When employees who contribute more to the organization receive more rewards, or when employees who contribute little to organizations receive few rewards, distributive justice is high. Literature pertinent to distributive justice is found in discussions of equity and merit. Procedural justice exists to the degree that rights are applied universally to all members of an organization[2]. Across-the-board application of rights constitute a situation of high procedural justice. Literature relevant to procedural justice is found in discussions of equality. Although commonly measured with perceptual data, both distribution and procedural justice refer to organizational behaviour.

The handbook has not been successful in encompassing distributive and procedural justice within a definition of justice that includes both concepts. Distributive and procedural justice appear to be two distinct concepts. When the term "fairness" is used in discussions of distributive justice, a common practice in the field, it has a different meaning than when used to discuss procedural justice. In the handbook, both concepts are included under the heading of justice because this is common in the field. Ultimately, however, distributive and procedural justice will have to be treated in different chapters, unless they can both be included in a general definition.

### **Measurement**

The two selections, by Kim *et al.* and by McFarlin and Sweeney (1992), use the common perceptual approach to the measurement of distributive and procedural justice respectively. Both selections also make use of the term "fairness" to assess their justice concerns.

### **Kim *et al.* (1996)**

#### *Description*

The purpose of this research was to estimate a causal model of intent to stay in an organization. Intent to stay was a proxy for turnover. The sample was 244 male physicians at a US Air Force hospital. Data were collected in the summer of 1990 by questionnaires and from records.

#### *Definition*

Distributive justice is defined as the "extent to which rewards and punishments are related to job performance" (p. 951). In this research, distributive justice is viewed as a determinant of the physicians' intent to remain in the US Air Force. Procedural justice was not a determinant in the causal model.



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*Data collection*

Three questionnaire items were used to collect data about distributive justice. These three items were embedded in a list of 111 statements designed to collect information to measure the determinants in the causal model. None of the items for the different determinants were, therefore, clustered together. The respondents were instructed to indicate their agreement or disagreement with each of the 111 items. The three items were as follows: "I am rewarded fairly for the amount of effort that I put in. (Money and recognition are examples of rewards.)"; "I am rewarded fairly considering the responsibilities I have"; and "I am not rewarded fairly in view of my experience". (These three items are question numbers 12, 64, and 72 on the questionnaire used by Kim *et al.*) Five responses were provided: "strongly agree, agree, neither agree nor disagree, disagree, and strongly disagree".

*Computation*

The five responses were scored from one to five, with strongly agree scored as five. To obtain a score for the scale, the scores for the three items were summed and divided by three. The mean and standard deviation are 2.45 and 0.99 respectively.

*Validity*

Two sets of data are pertinent to validity. First, the exploratory factor analysis that is relevant here included the 25 exogenous variables in the model[3]. According to Kim *et al.*, "...the vast majority of the measures showed discriminant and convergent validity" (p. 959). Distributive justice's measure was one of the "vast majority" of measures that showed discriminant and convergent validity. (To conserve space, Kim *et al.* did not present the results of the factor analysis.) Second, the causal model indicates that distributive justice is expected to influence intent to stay through satisfaction and commitment. The results of the ordinary least squares regression analysis indicate that distributive justice has no significant impact on satisfaction and commitment.

*Reliability*

The coefficient alpha for the three items is 0.85.

*Comments*

The definition of distributive justice used by Kim *et al.* is the same as the handbook's.

Two comments are pertinent about data collection. First, it is good that Kim *et al.* indicate that money and recognition are examples of rewards. This indication of the meaning of rewards was introduced the first time that "rewards" was used in the questionnaire, thus hopefully influencing the respondents' interpretation of rewards later in the questionnaire. A sizeable amount of research on distributive justice has defined rewards narrowly in terms of money and it is good to see an expanded definition of rewards used.

Second, Kim *et al.* did not help the respondents to define “fairly”. Fairly was used in each of the three questions and there was no attempt made to try to ensure that the respondents viewed fairly like Kim *et al.* Kim *et al.* did not locate the three distributive justice items in a cluster where it would have been possible to provide an example to help the respondents define fairly in the intended manner. To have done so would, of course, involve a major change in questionnaire format. The point is that, for whatever reason, Kim *et al.* did not attempt to exercise any control over the respondents interpretation of fairly. The respondents may thus have interpreted fairly in quite different ways[4].

Psychometrically, Kim *et al.*'s measure of distributive justice is quite acceptable. What is especially important is the data from the factor analysis and for coefficient alpha. It would have been better to have done a confirmatory factor analysis rather than an exploratory one, but Kim *et al.*'s small sample precluded the use of LISREL to estimate their complicated causal model.

*Source*

Kim *et al.* (1996).

**McFarlin and Sweeney (1992)**

*Description*

The purpose of this study was to examine the impact of distributive and procedural justice on personal and organizational outcomes. Job satisfaction and pay-level satisfaction were the personal outcomes examined; commitment and the subordinates' evaluation of their supervisors were the organizational outcomes assessed. The handbook will mostly focus on procedural justice.

Direct and interaction effects of distribution and procedural justice were also estimated on the personal and organizational outcomes. The sample consisted of 675 employees of a midwestern bank. These 675 employees constituted a 61 per cent response rate to a survey administered on company time. Most of the employees (74 per cent) were women.

*Definition*

Procedural justice is defined as “...the perceived fairness of the means used to determine...[compensation] amounts” (p. 626).

*Data collection*[5]

Four questions were used to measure procedural justice. Preceding the questions, and under a heading entitled “Fairness of procedures and rewards”, respondents were given the following instructions: “The following questions ask you to indicate how *fair* [company name] is regarding various aspects of your job. Use the code key below”. The code key had five responses: “very unfair, unfair, neutral, neither fair nor unfair, fair, and very fair”. Responses were inserted in blanks to the left of the questions. The four questions were as follows[6]:

- 
- \_\_\_ (1) “How fair are the promotion procedures?
  - \_\_\_ (2) How fair are the procedures used to evaluate employee performance?
  - \_\_\_ (3) How fair are the procedures used to determine salary increases?
  - \_\_\_ (4) How fair are the procedures used to communicate performance feedback to employees?

#### *Computations*

The scores ranged from one to five, with “very fair” scored as five. Judging from the mean, the scores of the four items were summed to obtain a score for the scale. The means and standard deviation are 11.88 and 3.06 respectively.

#### *Validity*

McFarlin and Sweeney find that distributive and procedural justice are important for both personal and organizational outcomes. Their results also indicate that distributive justice is more important for personal outcomes, whereas procedural justice is more important for organizational outcomes. Finally, they find that distributive and procedural justice interacted in predicting organizational outcome. No interaction effects exist for personal outcomes. Since all of these results were anticipated, except the lack of interaction effects for personal outcomes, these data mostly buttress the construct validity of the measures.

#### *Reliability*

The coefficient alpha for procedural justice is 0.82.

#### *Comments*

McFarlin and Sweeney’s definition of procedural justice differs from the handbook’s definition in two ways. First, they refer to “perceived” fairness rather than to behaviour. Second, they limit their concern to monetary rewards – note the reference to “compensation” – rather than to monetary *and* non-monetary rewards[7]. It is not clear how McFarlin and Sweeney’s fairness of procedures is related to the handbook’s universal application of rights within the organization. There may be an overlap between the concepts but the amount of overlap, if any, is ambiguous. There is thus a question of the pertinence of McFarlin and Sweeney’s measure for the handbook’s view of procedural justice.

No attempt is made by McFarlin and Sweeney to urge the respondents to adopt the researchers’ interpretation of “fairness”. It is also not clear how McFarlin and Sweeney view fairness, since they do not provide a conceptual discussion of this term.

The demonstration of most of the predictions supports the measures’ validity. However, the handbook would feel more comfortable with a confirmatory factor analysis that included other determinants of personal and organizational outcomes. The reliability of the measure is quite acceptable.

#### *Source*

McFarlin and Sweeney (1992).

**Notes**

1. The following sources were especially helpful in thinking about justice: Adams (1963); Folger and Konovsky (1989); Greenberg (1987, 1990); Hegtvedt (1994); Homans (1961, pp. 232-64); Lind and Tyler (1988); Markovsky (1985); Sandel (1996); Sheppard *et al.* (1992); Thibaut and Walker (1975); Walster *et al.* (1978).
2. This definition is based on Homans (1961, pp. 232-64).
3. This definition is based on Sandel (1996).
4. The four endogenous variables were factor analysed separately from the 25 exogenous variables.
5. The fairness items could be eliminated and some of this difficulty would be avoided. A series of specific questions could, for instance, be asked about the extent to which rewards and punishments are related to performance. This would, of course, necessitate a complete reworking of the scale.

The measures used by Kim and his colleagues make no provision for under-reward and over-reward and provide no reference points for the justice evaluation. Two comments are pertinent. First, a respondent may perceive himself/herself as being unfairly rewarded when they receive either too much or too little in relation to their performance. Over-reward appears to be relatively rare, but it does occur and it would be helpful if it could be distinguished from under-rewards. Second, the justice evaluation can change depending on the base of comparison. If the nurses in a hospital compare their rewards with physicians in the hospital, they will evaluate their rewards differently than if they compare the rewards with other nurses in the hospital. The Kim *et al.* measures provide no reference point for the justice evaluations. It is very difficult to provide these reference points when many different occupations are studied, as is common with much research in this area. It is not clear how these two weaknesses of Kim *et al.*'s measures can be corrected.
6. McFarlin graciously supplied these questionnaire items to the handbook.
7. Letters were used to designate McFarlin and Sweeney's original items.
8. The monetary emphasis is clearer if one examines McFarlin and Sweeney's definition of distributive justice: "...distributive justice refers to the perceived fairness of the amounts of *compensation* employees receive" (p. 627, emphasis added).

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## 18. Pay stratification

### Definition

Pay stratification is the degree to which income is differentially distributed within an organization[1]. If all the employees of an organization receive equal income, then pay stratification is at the minimum, whereas large differences in income between low-ranking employees and high-ranking employees indicate a substantial degree of pay stratification. Income includes both cash received and fringe benefits (Lawler, 1971, p. 1). Although fringe benefits are becoming more important in organizations, most research on pay stratification only examines the cash received. Material pertinent to pay stratification is also found in discussions of income inequality. "Inequality" is a common substitute for "stratification".

Social stratification is the differential distribution of scarce and valued resources[2]. Pay stratification is, of course, but one dimension of stratification. Chapter 20's discussion of centralization will examine power stratification, whereas Chapter 21 will treat prestige stratification, to complete the examination of Weber's three classic dimensions of stratification.

### Measurement

Although pay stratification is of concern to organizational scholars, it is seldom measured carefully. The usual practice is to note that there is more pay inequality in one organization than another, or between organizations in different societies, as indicated by the ratio between the income of employees at the top and bottom of the hierarchy of authority (Cockburn, 1983, p. 52; Gibney, 1982, pp. 66-7; Granick, 1962, pp. 46, 51; Moskos, 1970, pp. 44-6; Tannenbaum *et al.*, 1974, p. 108; Whyte, 1973). A 10:1 ratio, for example, indicates less inequality than a 20:1 ratio. This lack of careful measurement is odd when the measurement of income inequality is such a major concern to both sociologists and economists, and when a major literature exists about this topic. Rather than present a single measurement selection for this chapter, the handbook has reviewed the literature about the measurement of income inequality in sociology and economics. The review deals exclusively with calculations and does not systematically address issues of data collection. If organizational scholars are going to describe pay stratification, and this seems to be the case, then they should use the best possible measure. The review will identify the best measures.

#### *Review of commonly used measures*

This review will begin by briefly describing the kind of data necessary for using the measures of pay stratification. Next the criteria used to evaluate the various measures will be presented. The review will then identify some measures that have been used, but are inadequate. Finally, the measures the handbook recommends will be described and discussed.

*Data.* The data are the pay of each employee of the organization and can represent any source or combination of sources of pay. For example, the data could be total yearly salary and wages for all employees in the organization, or it could include various forms of fringe benefits, such as organization-provided health insurance or retirement programmes. It would, however, be necessary for all sources to be measured in the same unit, such as dollars. The only requirement of the measures to be described is that the data are ranked:  $X_1 < X_2 < X_3 < \dots < x_{11}$ . This is really no problem, since pay is a continuous variable with a meaningful zero point, and rank-ordering is easily accomplished.

The pay data may come from any source, but will most likely come from personnel records or questionnaire data. Personnel records would be the most reliable, although questionnaire reports have been shown to be acceptably reliable (Siegel and Hodge, 1968). The measures of pay stratification are statistical transformations or manipulations of the data, and such transformations are evaluated with respect to particular statistical and conceptual criteria, not just the standard validity and reliability concerns that have been utilized throughout this handbook. Because of this, the handbook will not describe studies that have used the various measures, but will identify the evaluation criteria and then evaluate the commonly used measures with respect to these.

*Criteria.* The criteria for evaluating the measures have been discussed extensively by economists and sociologists, but one of the clearest presentations is offered by Allison (1978), from whom the handbook has drawn three criteria:

- (1) When the pay is identical, the measure should equal zero; when the pay of two or more employees is different, it should be positive. In short, the scores on the measures should increase as the inequality increases[3].
- (2) The measure should exhibit scale invariance. This means that the degree of inequality will be unchanged when each employee's pay is multiplied by a positive non-zero constant. This is important because it would not be necessary to adjust for inflation when making comparisons over time. In addition, this characteristic allows organizations to be compared where the metrics of the pay measure are different, for example, comparisons of organizations in the USA, where the dollar is the unit, and organizations in Japan, where the yen is the unit. This characteristic would also allow for comparisons across different dimensions of stratification, such as power, pay, and prestige, although this is seldom done[4]. Another desirable characteristic of a scale-invariant measure is that the measure acts according to the principle of equal additions, that is, the measure must decline when a positive constant is added to each income. This means the measure is sensitive to relative inequality. For example, the three incomes of \$14,000, \$10,000, and \$6,000 suggest fairly substantial inequality, but if \$100,000 is added to each, the resulting

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incomes of \$114,000, \$110,000, and \$106,000 represent a situation where there is little inequality.

- (3) Another criterion often applied is referred to as the “principle of transfers”. In the organizational setting, it requires that the measure will increase in magnitude whenever income is transferred from a poorer employee to a richer one and decrease when the reverse type of transfer occurs. For example, if \$2,000 is taken from a company executive and given to a shop supervisor, the measure should decrease in magnitude.

*Inadequate measures.* Six commonly used but problematic measures of pay stratification can be identified:

- (1) The mean pay of employees in an organization is clearly inadequate, since it represents only a summary measure of the central tendency of all employees. It gives no information, by itself, of the degree of inequality. A measure of inequality must provide information about variation.
- (2) One of the simplest measures of dispersion is the *range*, which is defined as the difference between the smallest and the largest incomes. As mentioned in the introduction, the ratio of incomes of the top and bottom employees is often used; this ratio is derived directly from data about the range. The problem with this measure is that it is based on only two values. If these two values are extreme values (outliers) relative to most of the other values, then the range would be very misleading. This can be remedied to a degree by using the interquartile range, which gives the difference between the income extremes that include the middle 50 per cent of the income values. Even so, this relies on information from only two cases.
- (3) Those who remember their introductory statistics courses know that the measure of dispersion presented as the answer to these problems is the variance. The variance (and thus the standard deviation) gives the average dispersion about the mean and relies on information about all cases. It does not, however, exhibit the desirable characteristic of scale invariance. Thus, comparisons over time or with other types of inequality would not be valid.
- (4) Quartiles are often used to present pay inequality data. In particular, quintiles (dividing the data into five categories such that the top 20 per cent of the cases are in the top quintile, the next 20 per cent in the second quintile, and so on) are often presented in media accounts of pay inequality. Such data are excellent for describing concentration of income. For example, finding that the top 20 per cent of employees take in 40 per cent of the total pay, and the bottom 20 per cent take in 5 per cent of total pay, would clearly indicate inequality. The problem is that a summary measure about overall inequality in the organization is not easily obtained. For example, using “proportion of the total pay taken in

by the top 20 per cent” does not provide any information about the distribution of pay among the other 80 per cent.

- (5) Another measure is the *relative mean deviation*, often referred to as “Schutz’ coefficient”. The formula is:

$$D = \frac{1/n \sum_{i=1}^n |x_i - \mu|}{2\mu}.$$

The numerator is the average absolute deviation and the denominator is a function of the mean, so the measure is scale invariant. This measure does not, however, follow the principle of transfers.

- (6) The *variance of logarithms* is obtained by taking the logarithm of each income and computing the variance of the transformed scores. The formula is:

$$L = 1/n \sum_{i=1}^n (z_i - \bar{z})^2,$$

where  $z_i = \log x_i$  for all  $i$ s.

Although this measure has some desirable characteristics (Allison, 1978, p. 868), it does not satisfy the principle of transfers.

*The best measures.* Three measures can be recommended for use in measuring pay inequality, because they meet all three criteria.

- (1) The *coefficient of variation* has been suggested as a way of remedying the scale-invariance problem associated with the variance. It is computed as:

$$V = \frac{\sigma}{\mu}.$$

Dividing by the mean (or some function of the mean) operates to make the measure scale invariant.

- (2) *The Gini index* is probably the most often used measure of pay inequality. The formula is:

$$G = \frac{1/n^2 \sum_{i=1}^n \sum_{j=1}^n |x_i - x_j|}{2\mu}.$$

The numerator is the Gini coefficient of mean difference (GMD); it is the absolute difference between all pairs of individuals. The denominator is again a function of the mean introduced to give scale invariance. A computational formula is:

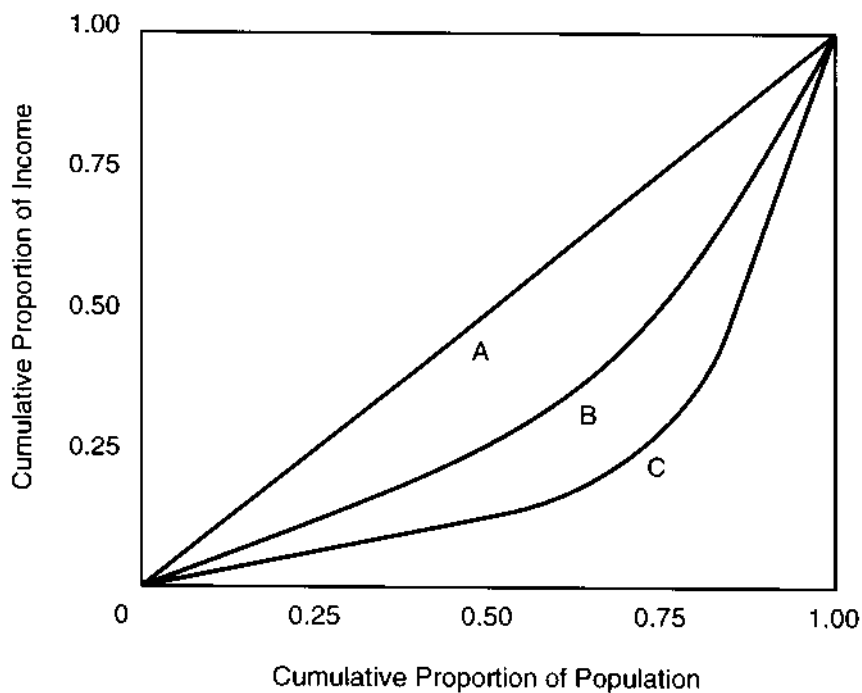


$$G = \frac{2}{\mu n^2} \sum_{i=1}^n i x_i - \frac{n+1}{n},$$

where  $i x_i$  indicates that each score is multiplied times its rank in the total distribution. This index meets all of the criteria identified above.

The Gini index is usually discussed in conjunction with the Lorenz curve, which is the plot of proportions of total pay against the proportion in the population. Figure 2 presents three Lorenz curves for three different distributions of pay.

433



**Figure 2.**  
Lorenz curves for three distributions of income

Line A shows no inequality, whereas line B indicates, for example, that the bottom 75 per cent of the population has 50 per cent of the total pay. Line C indicates that the bottom 75 per cent has approximately 20 per cent of the total pay. Mathematically, the Gini index actually indicates twice the area between the Lorenz curve and the line of perfect equality.

- (3) The *Theil index* is not used as often as the Gini, but it exhibits all of the desirable characteristics and is viewed quite positively by specialists. The formula is:

$$T = \frac{1/n \sum_{i=1}^n x_i \log x_i - \mu \log \mu}{\mu}.$$

Allison (1978, p. 869) argues that the Theil index is to be preferred, since careful examination of its behaviour regarding the principle of transfers shows it to offer certain advantages. In particular, its sensitivity to transfer decreases as scores increase; this is a valuable characteristic if there are diminishing marginal utilities associated with the pay. However, if comparisons with other studies is the goal, the Gini should be given serious consideration, since it is the most popular index in the literature. The Gini index, the Theil index, and the coefficient of variation can all be recommended, however, as measures of pay stratification[5].

**Notes**

1. This chapter was written by Professor Charles W. Mueller.
2. This definition is based primarily on the conceptual discussion of social stratification by Heller (1969, pp. 3-4).
3. Although inequality is a less neutral term than stratification, it has become the more often used term when stratification measures are presented and discussed. The handbook uses the two terms synonymously.
4. Mathematically, this condition is attained by dividing the measure by the mean of the distribution or some function of the mean.
5. The upper and lower bounds of these three measures are known. For an infinite population, the range for the Gini index is zero to one, and for the coefficient of variation and the Theil index it is zero to infinity. For finite populations, the upper bound for the Gini index is  $1 - 1/n$ , for the coefficient of variation, it is the square root of  $n - 1$ , and for the Theil index it is  $\log n$ .

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## 19. Positive and negative affectivity

Positive and  
negative  
affectivity

### Definition

Positive and negative affectivity are the tendency to experience pleasant and unpleasant emotions respectively[1]. These variables are commonly referred to as “dispositional” concepts. When assessed by measures that refer to a very short-term period, such as the period when the instrument is being administered, the term “state” is commonly used to designate these emotions. When assessed by measures that refer to longer periods, such as one’s general feelings, the term “trait” is commonly used. Trait and disposition are thus similar concepts. To compound further the profusion of concepts, two additional terms are used, “affect” and “mood”. These two terms are commonly used as equivalent to “state”. Reference is thus made to positive and negative affect in addition to positive and negative affectivity. The concern of this chapter is with positive and negative affectivity – the disposition and trait variables[2].

Positive and negative affectivity are viewed as two distinct variables[3]. An individual has degrees of positive affectivity *and* degrees of negative affectivity. Affectivity does not extend from positive at one end of a continuum to negative at the other end.

Positive and negative affectivity are new concepts for the handbook. Like internal labour market, they were not included in either the 1972 or 1986 versions of the handbook. At first glance, it may appear unusual to have a chapter on two dispositional concepts in a handbook of organizational measurement. But, as the introductory chapter indicated, “organizational” means concepts regularly used by organizational scholars to describe their field of study. The same point was previously made regarding the chapter on the environment. A similar point could have been noted in the chapters on commitment and involvement, but these concepts are so basic in the study of organizations that it is often forgotten that their unit of analysis is the individual and not the organization. The forthcoming chapter on satisfaction is like commitment and involvement. The third measurement selection of this chapter, by Judge and Bretz, questions the view that positive and negative affectivity are distinct concepts.

Positive and negative affectivity are different concepts to satisfaction. Watson *et al.* view positive and negative affectivity as determinants of satisfaction and as variables that may contaminate the measurement of other possible determinants. If an employee, for instance, tends to experience pleasant emotions, and if social support from colleagues is viewed as a determinant of satisfaction, then this employee may indicate strong social support when such support does not exist, because he/she tends to experience pleasant emotions. Positive and negative affectivity, therefore, must be controlled when attempting to explain satisfaction[4]. Agho *et al.* (1992) provide data confirming the difference between positive/negative affectivity and satisfaction.

Positive and negative affectivity is but one of several dispositional variables of concern to organizational scholars. In the five-factor model of personality (Digman, 1990), for instance, positive and negative affectivity are referred to as emotional stability. The remaining four dimensions are as follows: extraversion/introversion, friendliness/hostility, conscientiousness, and intellect. Organizational scholars appear to focus more on positive and negative affectivity than on the other four dimensions of personality.

### **Measurement**

The first selection, by Watson *et al.*, is mostly concerned with describing the development of scales to measure positive and negative *affect*, the state measure previously alluded to. However, Watson *et al.* (1988) also have in their measure an item to assess positive and negative *affectivity*, the previously indicated trait measure. The scale by Watson *et al.* is widely used and is typically referred to as the PANAS measure. The second selection, by Stokes and Levin (1990), is only concerned with developing a measure of negative affectivity. Conceptually, Stokes and Levin's research is based on the work of Watson *et al.* The third selection, by Judge and Bretz (1993), questions the idea that affective disposition has positive and negative dimensions, and proposes an alternative measure of affective disposition. As much as possible, the handbook seeks to present alternative measures of concepts. With Judge and Bretz, however, an alternative conceptualization and measurement are presented.

### **Watson *et al.* (1988)**

#### *Description*

The purpose of this paper was to report on the development of scales to measure positive and negative affect or mood. A special attempt was made to develop scales which were brief and easy to administer. Most of the subjects used in the development were undergraduates enrolled in psychology courses at Southern Methodist University. However, some non-undergraduates were also used in the development of the scales[5]. Although most of the article focuses on positive and negative affect or mood, the handbook is especially interested in those parts of the development that examines general affect or mood, which is a trait rather than state measure.

#### *Definition*

Positive affect "...reflects the extent to which a person feels enthusiastic, active, and alert", whereas negative affect "...is a general dimension of distress and unpleasurable engagement that subsumes a variety of aversive mood states..." (p. 1063). Positive and negative affect are interchangeable with mood.

#### *Data collection*

To collect information about positive and negative affect, 20 questionnaire items were used, ten items for each type. Preceding the 20 questionnaire items, the respondents were given the following instructions: "This scale consists of a

number of words that describe different feelings and emotions. Read each item and then mark the appropriate answer in the space next to the word. Indicate to what extent [insert appropriate time instructions here]. Use the following scale to record your answers” (p. 1070). Five responses were provided: “very slightly or not at all, a little, moderately, quite a bit, and extremely” (p. 1070). The 20 items were presented in two columns:

<input type="checkbox"/> interested	<input type="checkbox"/> irritable
<input type="checkbox"/> distressed	<input type="checkbox"/> alert
<input type="checkbox"/> excited	<input type="checkbox"/> ashamed
<input type="checkbox"/> upset	<input type="checkbox"/> inspired
<input type="checkbox"/> strong	<input type="checkbox"/> nervous
<input type="checkbox"/> guilty	<input type="checkbox"/> determined
<input type="checkbox"/> scared	<input type="checkbox"/> attentive
<input type="checkbox"/> hostile	<input type="checkbox"/> jittery
<input type="checkbox"/> enthusiastic	<input type="checkbox"/> active
<input type="checkbox"/> proud	<input type="checkbox"/> afraid

The ten items for each type of affect were dispersed equally in the two columns. For positive affect, the following ten descriptors were used: attentive, interested, alert, excited, enthusiastic, inspired, proud, determined, strong, and active. Ten descriptors were also used for negative affect: distressed, upset, hostile, irritable, scared, afraid, ashamed, guilty, nervous, and jittery.

The following time instructions were to be inserted into a previous lead-in statement at the indicated place:

- Moment (you feel this way right now, that is, at the present moment).
- Today (you feel this way today).
- Past few days (you have felt this way during the past few days).
- Week (you have felt this way during the past week).
- Past few weeks (you have felt this way during the past few weeks)
- Year (you have felt this way during the past year).
- General (you generally feel this way, that is, how you feel on the average).

#### *Computation*

The five responses were scored from one to five, with “very slightly or not at all” scored as one. Each respondent had ten descriptors for each of the seven time periods. A total score was obtained by summing the ten descriptors for a time period. The range for each time period is from ten to 50. For the “general” time period – the focus of the handbook – the mean and standard deviation for positive affectivity are 35.0 and 6.4; the corresponding statistics for negative affectivity are 18.1 and 5.9. The handbook assumes that the “general” time period assesses a trait rather than a state, that is, positive and negative affectivity[6].

*Validity*

Watson and his colleagues present a large amount of data pertinent to validity. Two sets of data, however, are especially relevant. The ten-item scales have, according to Watson *et al.*, "...excellent convergent and discriminant correlations with lengthier measures of underlying mood factors" (p. 1069). The PANAS measure of negative affect, for example, correlates very highly (0.74 and 0.65) with the Hopkins symptom checklist (p. 1068). The ten-item scales "...correlate at predicted levels with measures of related constructs and show the same pattern of relations with external variables that has been seen in other studies" (p. 1069). "The positive affect scale, for instance, is related to social activity and shows significant daily variation, whereas the negative affect scale is significantly related to perceived stress and indicates no daily pattern" (p. 1069).

*Reliability*

Coefficient alphas and test-retest coefficients are presented to assess reliability. Alpha reliabilities for the "general" time period, which the handbook believes measure positive and negative affectivity, are 0.88 for the positive type and 0.87 for the negative type. Test-retest coefficients for an eight-week period, for the "general" time period, are 0.68 and 0.71 for the positive and negative types respectively.

*Comments*

This well-executed study is a welcome addition to the literature. From the point of view of the handbook, the only quibble is that it would have been better had the entire study focused, not on affect or mood, but on positive and negative affectivity. Affect, however, is an important topic and this focus is clearly justified. The handbook has difficulty distinguishing affect/mood from satisfaction, and Watson *et al.* have no discussion about how satisfaction fits in with their conceptual and measurement concerns.

Watson and his colleagues' definition of positive and negative affect is consistent with the handbook's view of positive and negative affectivity. The only difference is that Watson *et al.* mostly focus on affect (the state) rather than affectivity (the trait). As previously indicated, the handbook's conceptualization is based on the work of Watson *et al.*

The psychometric properties of the PANAS measures are very acceptable. It would have been helpful to have had a factor analysis of these measures, especially for the general time period, with other determinants commonly used in the study of satisfaction and commitment. Agho and his colleagues (1993) did such a factor analysis and the results strongly supported the validity of Watson's measures of positive and negative affectivity. The measures used by Agho *et al.*, however, were not the PANAS measures, but were obtained directly from Watson and are unpublished.

*Source*

Watson *et al.* (1988).

**Stokes and Levin (1990)***Description*

The purpose of this research was to describe the development and testing of a measure of negative affectivity (NA) as the concept has been described by Watson and his colleagues[7]. Two samples and three samples were used in the development and validation of the measure respectively. Undergraduate students from an introductory psychology class ( $N = 381$  and  $N = 323$ ) were used in the development of the measure. The validation studies used introductory psychology students ( $N = 200$  and  $N = 215$ ) and professional staff from a large international service firm ( $N = 315$ ). Most of the handbook's attention will be on the validation studies.

*Definition*

Negative affectivity "...is a dispositional trait characterized by a tendency to experience aversive emotional states" (p. 173). As previously indicated, this is the definition of negative affectivity proposed by Watson and his colleagues.

*Data collection*[8]

Stokes and Levin used 21 questionnaire items to assess negative affectivity. The following lead-in statement preceded the listing of the items: "Please read the following statements and circle the number that best represents the extent to which you agree or disagree with what is said. Use the following scale: (1) disagree strongly, (2) disagree, (3) disagree slightly, (4) agree slightly, (5) agree, and (6) agree strongly. The following 21 items, plus their scoring, were used to collect data:

- |   |   |   |   |   |   |   |
|---|---|---|---|---|---|---|
| (1) After an embarrassing experience I worry about it for days.....       | 1 | 2 | 3 | 4 | 5 | 6 |
| (2) I know that things will continually improve in my life.....           | 1 | 2 | 3 | 4 | 5 | 6 |
| (3) I feel that I have a great deal to be proud of.....                   | 1 | 2 | 3 | 4 | 5 | 6 |
| (4) I often feel restless and jittery for no apparent reason.....         | 1 | 2 | 3 | 4 | 5 | 6 |
| (5) Things rarely work out the way I want them to .....                   | 1 | 2 | 3 | 4 | 5 | 6 |
| (6) I am not as well liked as most other people .....                     | 1 | 2 | 3 | 4 | 5 | 6 |
| (7) Every day seems exciting, new, and different.....                     | 1 | 2 | 3 | 4 | 5 | 6 |
| (8) My feelings are more easily hurt than most other people.....          | 1 | 2 | 3 | 4 | 5 | 6 |
| (9) I can easily concentrate on things for as long as I like.....         | 1 | 2 | 3 | 4 | 5 | 6 |
| (10) Whenever someone criticizes me I think about it for days .....       | 1 | 2 | 3 | 4 | 5 | 6 |
| (11) I am hopeful and optimistic about the future.....                    | 1 | 2 | 3 | 4 | 5 | 6 |
| (12) When things go wrong I blame myself.....                             | 1 | 2 | 3 | 4 | 5 | 6 |
| (13) I rarely lose sleep over worrying about something.....               | 1 | 2 | 3 | 4 | 5 | 6 |
| (14) I am a person of worth, at least as good as other people.....        | 1 | 2 | 3 | 4 | 5 | 6 |
| (15) I always expect the worst to happen .....                            | 1 | 2 | 3 | 4 | 5 | 6 |
| (16) I am more content and happy than most other people .....             | 1 | 2 | 3 | 4 | 5 | 6 |
| (17) Happy endings only occur in the movies and in fairy tales.....       | 1 | 2 | 3 | 4 | 5 | 6 |
| (18) I am not as self-confident as most other people .....                | 1 | 2 | 3 | 4 | 5 | 6 |
| (19) When I meet people for the first time I am tense and uptight.....    | 1 | 2 | 3 | 4 | 5 | 6 |
| (20) If I could live my life over I would do many things differently..... | 1 | 2 | 3 | 4 | 5 | 6 |
| (21) The future seems rather bleak and unpromising .....                  | 1 | 2 | 3 | 4 | 5 | 6 |

*Computation*

Judging from the lead-in statement, the scoring appears to range from one to six, with "agree strongly" scored as six. The following items were reverse scored: 2, 3, 7, 9, 11, 13, 14, and 16. Examining the mean scores, the 21 items were apparently summed to obtain a total scale score. Mean scores for the 21-item NA scale for the two developmental samples are 63.15 and 62.81; the standard deviations for the two samples are 17.12 and 15.96. Means and standard deviations are not provided for the three validation studies.

*Validity*

Three studies, as previously indicated, provide data about the validation of the negative affectivity (NA) scale. First, convergent and discriminant validity were investigated by correlating the NA scale with measure of concepts hypothesized to be related and unrelated to NA based on past research. As hypothesized, the NA scale correlates significantly and positively with the Taylor Manifest Anxiety scale, the Eysenck Neuroticism scale, the Rosenberg Self-Esteem scale, and the Eysenck Extraversion scale (p. 179)[9]. Also as hypothesized, no relationship is found between the NA scale and the Remotes Associates Test. However, a significant and unexpected relationship is found between the NA scale and the Shipley Vocabulary test. The second study provides additional information about the convergent and discriminant validity of the NA scale. As hypothesized, none of the intellectual achievement measures correlate significantly with NA. Four measures of intellectual achievement were used: the Shipley Vocabulary test, the Shipley Abstraction test, the Scholastic Aptitude test (SAT) antonyms, and the SAT mathematics. It is not fully clear why the results for the Shipley Vocabulary test came out as anticipated in the second study but not the first. Also as hypothesized, NA correlates significantly and negatively with the Edwards Social Desirability scale, the Marlowe/Crowne Social Desirability scale, and Gurin/Veroff/Feld's "happiness/life satisfaction" measures. The NA measure also correlates significantly and positively, as expected, with 12 descriptors of negative affect drawn from the work of Watson and his colleagues. Seven descriptors of positive affect, also drawn from the work of Watson and his colleagues, are correlated with NA. A negative relation is found but no prediction had been made about the relationship. Stokes and Levin, however, view these results for positive affect as demonstrating poor discriminant validity for their measure. The third study examines the relationship between NA and job satisfaction. Six measures of satisfaction were used from the job diagnostic survey (JDS) and the job descriptive index (JDI). The JDS supplied a composite measure and the JDI supplied five facet measures (work itself, pay, coworkers, supervision, and promotional opportunities). As hypothesized, NA correlates negatively and significantly with the six measures of satisfaction. Stokes and Levin believe that their measure constituted a valid measure of NA, except for the poor discriminant validity for positive effect. The different results for the Shipley Vocabulary test are not discussed.



*Reliability*

Most of the data pertinent to reliability come from the two development studies. Coefficient alphas are 0.87 and 0.84 for the 21-item scale for development samples one and two respectively. Eighty-five subjects from development sample two completed the 21-item scale six weeks after their original testing; the test-retest coefficient is 0.88. A coefficient alpha of 0.85 is indicated for the second validation study.

*Comments*

The PANAS measure used to assess negative affectivity was mostly concerned with affect or mood, so it is helpful to have a measure of affectivity exclusively devoted to the tendency to experience aversive emotions. Hopefully, someone will develop a similarly exclusive measure for positive affectivity.

Stokes and Levin's definition of negative affectivity corresponds to the handbook's, since both definitions are based on the work of Watson and his colleagues.

The 21-item scale will be too long for many researchers. However, the scale can probably be shortened without too much loss of measurement quality. Item-scale correlations are provided (p. 177) for the five samples, and these can be used to reduce the length of the scale. The items, for example, with the smallest correlations can be eliminated.

The handbook agrees with Stokes and Levin's evaluation that "...the NA scale has good psychometric properties" (p. 181). Would that all researchers devoted such quality effort to the development and testing of their scales. Since the scale will be used by some researchers to control for contamination of the determinants of causal models, it will be interesting to see the scale validated with these determinants.

*Source*

Stokes and Levin (1990).

**Judge and Bretz (1993)***Description*

The purpose of this research was to critique the idea that affective disposition has positive and negative dimensions and, based on this critique, to offer an alternative measure of affective disposition. Subjects for this research were 184 employees who were enrolled in a training course at a large manufacturing organization in the Northeast USA. This research was part of a larger study on training programme effectiveness. Subjects constituted a representative sample of the organization. The handbook focuses mostly on the new measure, the Neutral Objects Satisfaction Questionnaire (NOSQ), and de-emphasizes the critique.

*Definition*

Affective disposition is not defined but is viewed as a "trait" rather than a "state" – to refer to the earlier conceptual discussion at the start of the chapter – that differs from subjective well-being (a state) and job satisfaction.

*Data collection*

The 25 items used to collect data about affective disposition were adapted from a measure developed by Weitz (1952). Preceding the 25 items were the following directions: "The following questions ask about your degree of satisfaction with several items. Circle the numbered response that best represents your feelings about the corresponding item". Three responses were provided: "dissatisfied, neutral, and satisfied".

The following 25 items were used to collect data:

	Dissatisfied	Neutral	Satisfied
(1) The city in which you live.	1	2	3
(2) The residence where you live.	1	2	3
(3) The neighbours you have.	1	2	3
(4) The high school you attended.	1	2	3
(5) The climate where you live.	1	2	3
(6) The movies being produced today.	1	2	3
(7) The quality of food you buy.	1	2	3
(8) Today's cars.	1	2	3
(9) Local newspapers.	1	2	3
(10) Your relaxation time.	1	2	3
(11) Your first name.	1	2	3
(12) The people you know.	1	2	3
(13) Television programmes.	1	2	3
(14) Local speed limits.	1	2	3
(16) Advertising.	1	2	3
(17) The way you were raised.	1	2	3
(18) Telephone service.	1	2	3
(19) Public transportation.	1	2	3
(20) Restaurant food.	1	2	3
(21) Yourself.	1	2	3
(22) Modern art.	1	2	3
(23) Popular music.	1	2	3
(24) 8½ × 11" paper.	1	2	3
(25) Your telephone number (p. 1101).	1	2	3

*Computation*

The three responses were scored from one to three, with "dissatisfied" scored as one. Since no mean and standard deviation were provided, it is not clear how a total scale score is to be computed. Items like this are most often summed.

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*Validity*

A confirmatory factor analysis, conducted using LISREL 7, was performed and the results are interpreted as indicating that the 25 items converged on a single concept representing affective disposition. Table I in the article (p. 1101) has the loadings and standard errors for the 25 items. The 184 subjects were used for the confirmatory factor analysis.

*Reliability*

The NOSQ was administered twice to 100 of the 184 subjects of the study; 84 of the subjects did not complete the training programme. A six-month interval passed between the first and second administrations of the questionnaire. The uncorrected and corrected stability coefficients are 0.75 and 0.88 respectively. The stability coefficients represent correlations between the measures of Time 1 and Time 2. Corrections were made for unreliability.

*Comments*

In addition to being very competently conducted, this study is especially welcome because of its criticism of the idea that affective disposition has positive and negative dimensions. The ordinary organizational researcher, not being aware of technical discussions in psychology, encounters the positive and negative distinction so often that he/she assumes that it is firmly established in the literature. The Judge and Bretz article offers an alternative view. Additional critical material is noted in the working paper cited at the end of this section.

There should have been a conceptual discussion of affective disposition. However, its meaning is clear when it is viewed as a trait that is different from subjective well-being (a state) and satisfaction.

Two comments are in order about the instrument. First, the references to "satisfaction" are worrisome, since affective disposition is intended to be different from satisfaction. Since the NOSQ is still being developed, it might be a good idea to drop references to satisfaction in the directions to the respondents. Second, the NOSQ will be rather long for many researchers, especially those who are estimating causal models. The NOSQ can be shortened by eliminating some of the items with low loadings (Table I, p. 1101).

An excellent beginning has been made in developing an instrument with good psychometric properties. Other development work, however, must still be done. As indicated in the first two selections, it would be helpful to see a factor analysis of the NOSQ and some common determinants of such concepts as satisfaction and commitment. It would also be helpful to see some predictive studies done with the NOSQ. Finally, it would be valuable to do a factor analysis of the NOSQ, satisfaction, commitment, and involvement. The last three concepts are widely used social psychological variables that should be different from affective disposition. A single study cannot do everything and what has been done is impressive.

*Sources*

In addition to Judge and Bretz (1993), also relevant is a working paper by Judge and Carter (undated).

**Notes**

1. This definition is based on the work of Watson *et al.*, 1988.
2. The handbook has difficulty distinguishing affect and mood from satisfaction. Each of these three concepts is intended to refer to *feelings* and the handbook has opted to use the more common term, satisfaction. As will be noted later, satisfaction will be defined so that it has no *cognitive* components.
3. In addition to Watson *et al.* (1988), see Watson (1988) and Watson and Tellegen (1985).
4. Brief and his colleagues (1988) have been leading exponents of this point of view.
5. The sample sizes varied for the different time instructions: moment ( $N = 660$ ), today ( $N = 657$ ), past few days ( $N = 1,002$ ), past few weeks ( $N = 586$ ), year ( $N = 649$ ), and general ( $N = 663$ ).
6. "Year" might also have been used to refer to positive and negative affectivity.
7. The references for Watson *et al.* were cited earlier in the chapter.
8. The instrument used to collect this data was graciously supplied by Professor Stokes.
9. The sources for all of these measures are, of course, contained in the Stokes and Levin (1990) article.

### Definition

This chapter differs from the previous chapters because it focuses on three concepts – autonomy, centralization, and bases of power – rather than one. Each of the three concepts examines a different aspect of power. Unlike the three concepts, power is a label that refers to a category of behaviour rather than a variable. Power is thus similar to administrative staff in the chapter on administrative intensity. Administrative staff is a label that refers to a category of organizational employees, whereas administrative intensity is a variable. There are degrees of administrative intensity, whereas an employee is or is not part of the administrative staff. This introductory section will define and illustrate power; the three aspects of power will be defined and illustrated throughout the chapter.

Power is the production of intended effects by some person(s) on other person(s)[1]. Seven points require elaboration. First, basic to this definition is the production of effects. If a supervisor, for example, issues an order to an employee and the order is not obeyed, then the supervisor has no power, despite having the right to issue the order. Rights are important, as will soon be indicated in the discussion of legitimacy, but it is the production of effects which is critical. Second, *intended* effects are stressed[2]. Some discussions of power emphasize intent, whereas other discussions exclusively examine effects, whether intended or not. The handbook prefers the idea of intended effects, because it is somewhat more restricted in meaning and may thus be empirically more manageable; it also seems to capture what many scholars mean by power. Third, emphasis on the production of effects is compatible with the idea of legitimacy, which is central in most discussions of power[3]. Individuals who produce intended effects may do so legitimately or illegitimately. It is important whether power is legitimate or illegitimate; the former is believed to be more stable than the latter. Following Weber, the handbook considers authority to be legitimate power. Fourth, force may or may not be involved in the production of intended effects. Most of the time the power that is observed in organizations is not the result of force, so it would be unfortunate if power were equated with force. Fifth, face-to-face interaction may or may not be involved in the exercise of power. Although power in organizations commonly appears in face-to-face interaction, there are numerous examples of power that is not the result of personal contact, but comes through directives issued higher in the hierarchy[4]. Sixth, the handbook does not view power in zero-sum terms, that is, it is not assumed that there is a limited amount of total power, such that if one person gains power another person must lose it. The power of an organization over its members can increase or decrease; it is not a fixed amount[5]. Seventh, intended effects can be either ideas or behaviour. Although behaviour effects are commonly examined, organizations expend a great deal of effort trying to influence ideas of their members or of outsiders.

## **Autonomy**

### *Definition*

Autonomy is the degree to which an organization has power with respect to its environment[6]. The typical government agency and business firm, to illustrate, differ greatly in their autonomy. External units, such as legislatures and budget bureaus, exercise substantial power over the government agency's decisions with respect to policy, budget, personnel, and purchasing. In the typical business firm, none of these decisions is made substantially by units external to the firm; the top executives generally determine its critical operations. Either implicitly or explicitly, autonomy is the focus of concern in organizational studies dealing with strategy, the exercise of political power over organizations in the society, the role of governing boards, and the vertical integration of business firms. The range of these topics illustrates the importance of autonomy in the study of organizations. Autonomy is clearly a classic topic in organizational research.

The term "autonomy" is commonly used to refer to jobs rather than to organizations. When centralization is discussed later in the chapter, the job-type of definition will be referred to as "work autonomy"[7]. The handbook, however, restricts the term autonomy to the organization's relation to its environment.

### *Measurement*

The National Organizations Study (NOS) has three measures pertinent to autonomy. However, the NOS does not discuss these measures in the context of autonomy. As previously indicated, the concept of autonomy is a traditional organizational topic, and the NOS measures are so relevant that the handbook suggests these measures be used to assess autonomy.

### *Kalleberg et al. (1996)*

*Description.* Basic descriptive information about the National Organizations Study (NOS) was first presented in the chapter on administrative intensity, and there is no reason to repeat this information. What is of concern in the present chapter is the NOS data about institutionalization, union pressure, and branch status of the organization studied. The NOS views these data as part of the "environmental setting" (pp. 55-65), whereas the handbook views them as measures of autonomy.

*Definition.* The first set of measures is termed "institutionalization" by the NOS. With this set of measures, the NOS has attempted to capture key ideas advanced by scholars who emphasize the "institutional approach" to the study of organizations[8]. Union pressure gauges the demands made by the union on the organization, assuming, of course, that the employees of the organization are represented by a union. Branch status refers to whether or not the organization studied stands alone or is part of a larger firm.

*Data collection.* Four questionnaire items were used to collect data about institutionalization:

- 
- (1) Is (establishment) subject to a periodic review by an outside accreditation or licensing organization?
  - (2) Does (establishment) belong to an association of organizations like it?
  - (3) In evaluating (establishment's) performance, to what extent do you pay attention to the practices of other organizations like [establishment]?
  - (4) How much are (establishment's) operations regulated by government agencies?" (p. 61).

Power

**447**

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"Establishment", of course, refers to the organization studied. The first two questions had a "yes" or "no" response. Three responses were used for the third question: "Very much, somewhat, and very little"[9]. No response could be located for the fourth question.

Four questionnaire items were also used to collect data about union pressure:

- (1) Is any of the formal training offered because of union contracts?
- (2) How important are each of the following for determining the earnings of (COREs) here? What about union negotiation?
- (3) How important are each of the following for determining the earnings of (GSS) here? What about union negotiations?
- (4) Over the next three years, how big a problem will each of the following be for (establishment)? What about relations with unions? (p. 64).

"CORE" employees are those directly engaged in production of the organization's main output, whereas "GSS" employees refer to the occupations of the respondents who recommended the organization for inclusion in the sample. The respondents in the telephone interview would know the meaning of CORE and GSS. The first question had "yes" or "no" responses. Three responses were provided for the second and third questions: "very important, somewhat important, and not important". The fourth question also had three responses: "a major problem, a minor problem, and not a problem at all"[10].

A single question was used to assess branch status: "Is [establishment] in any way part of a larger organization or is it completely independent?" Two responses were provided, "part of a larger organization" and "completely independent"[11]. (This is question number 40 on the telephone-interview schedule.)

*Computation.* The five items of the institutionalization scale were recoded to a one to five scale prior to computing the scale score, with high scores indicating more institutional pressure. Judging from the mean, the scores for the four items were summed to compute a total scale score. The unweighted mean and standard deviations are 3.47 and 1.08 (p. 61), whereas the corresponding weighted scores are 2.62 and 1.11 (p. 61). Unweighted and weighted scores refer to individuals and organizations respectively.

The scoring is not clearly presented for the scale of union pressure. The unweighted mean and standard deviation are 1.38 and 0.58 respectively; the corresponding weighted scores are 1.06 and 0.23 (p. 64).

Branch status is not scored like institutionalization and union pressure. The organization studied is either part of a larger organization or it is not. In traditional measurement terms, branch status is a nominal "measure". It is conventionally termed a "measure" although no number is assigned. Nominal measures were used in the chapter on departmentalization to categorize the different ways that work is subdivided in an organization, such as by function or product.

*Validity.* The material on major results (pp. 326-9) indicates that, as expected, branch organizations have higher degrees of formalization and centralization than do comparable independent organizations. No comparable data are provided for institutionalization and union pressure. These concepts were not of major concern to the NOS.

*Reliability.* The Cronbach alphas for institutionalization and union pressure are 0.56 and 0.82 respectively. Since branch status is measured by a single item, Cronbach's alpha could not be computed.

*Comments.* Institutionalization, union pressure, and branch status appear, as previously indicated, to measure the handbook's concept of autonomy. An organization which is subject to a great deal of institutional pressure is one whose power is restricted relative to the environment. Similarly, an organization which is subject to a large amount of union pressure is one whose power is restricted relative to the union environment. Finally, it is common knowledge that branches of organizations have less autonomy than independent units. The three sets of data, therefore, can be interpreted as indicators of autonomy.

From the perspective of the handbook, it would have been better for the NOS to have used the concept of autonomy to construct a scale. Such a procedure would have allowed autonomy explicitly to be treated like the other concepts of the handbook. Since autonomy is a long-standing concern in the study of organizations, such a procedure would seem to be a good idea.

In terms of future research, the institutionalization scale would appear to have the greatest potential. What should be done is to expand the scale to include *all* major aspects of the environment. Union pressure and branch status could, for example, be part of an expanded measure of institutionalization. There does not seem to be a lot of potential for union pressure as a measure of autonomy, since only a small percentage of organizations have employees who are represented by a union. If unions are incorporated into the institutionalization scale, they can be viewed as part of a larger category of environmental organization. As just indicated, the reduced autonomy indicated by branch status can be incorporated into an expanded institutionalization scale. A re-examination of the literature embodying the institutional approach should suggest a series of indicators that could be included in an expanded institutionalization scale. The recommended expansion of the institutionalization scale assumes that the concept of autonomy will be used to conceptualize the power that an organization has relative to its environment.

The scoring is not clear for institutionalization and union pressure. It is not apparent, for example, how the very different responses for the



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institutionalization scale were recoded on a one to five scale. Or again, the survey schedule for union pressure had weights for the different items, but directions were not provided for treatment of these weights. It appears, for instance, as if the items for union pressure were recoded before they were summed, but this is not explicitly indicated[12]. It would have been easier for the reader had the NOS presented all of their scales, in a standardized manner, in an appendix to their book. Editors resist this sort of appendix, but the significance of this study requires such a section. As the study now stands, replication will be difficult. Kalleberg and his colleagues will also be answering many questions that could have been answered by a standardized appendix.

Psychometrically, the three measures are not impressive. Validity data were only presented for branch status and the reliability of the institutionalization measure was too low. The reliability of the union pressure measure, however, was quite acceptable. However, the NOS's measures of environmental settings are not as good as the other measures reported in the study, but, as noted before, these were not dominant concerns in the NOS.

*Source.* Kalleberg *et al.* (1996).

### **Centralization**

#### *Definition*

Centralization is the degree to which power is differentially distributed within an organization (Hall, 1982, pp. 114-15). The maximum degree of centralization would exist if all the power in an organization were exercised by a single individual; the minimum degree of centralization would exist if all the members of the organization shared equally in the exercise of power. Most organizations, of course, fall somewhere between the maximum and minimum degrees of centralization. Pertinent material relevant to centralization is contained in discussions of the following topics: participative management, hierarchy of authority, close-general supervision, monocratic-democratic authority, executive-colleague authority, unilateral-bilateral decision making, and devolution. The number of different labels is indicative of the importance of centralization to organizational scholars[13].

Autonomy and centralization focus on the distribution of power. The difference is that autonomy concerns the distribution of power between the organization and its environment, whereas centralization centres on the distribution of power within the organization.

The literature on social stratification has traditionally distinguished three dimensions: pay, prestige, and power[14]. Chapter 18 dealt with pay stratification and Chapter 21 will examine prestige stratification. The handbook considers centralization to be power stratification. Weber's three dimensions of stratification will thus be examined in the handbook.

"Leadership" is an important topic in the study of organizations, but the handbook does not have a chapter devoted to it[15]. The handbook treats the ideas discussed in the leadership literature but does so under different labels. Using centralization as an illustration, a common concern in the leadership

literature is the extent to which the leader is “democratic” or “authoritarian”. One characteristic of the democratic leader is willingness to promote participation in decision making; the greater the participation, the more democratic the leader[16]. Centralization is concerned with participation in decision making, but the handbook labels this concern “distribution of power”. Other aspects of the leadership literature are treated elsewhere in this handbook, such as in Chapter 5 on communication. It is difficult to use the measures developed in the leadership literature, primarily because these measures commonly gauge a variety of different concepts. Each label in the handbook, such as autonomy and centralization, refers to a single concept. The concept may have different dimensions, but each label refers to a single idea.

Current research on centralization commonly focuses on its dimensions. Chandler’s classic work (1962), for example, distinguishes between strategic and tactical decisions. Becker and Gordon (1966) distinguish among decisions concerning work activities, resource allocation, and co-ordination. Unlike research on satisfaction, where the dimensions are fairly well standardized, there is little standardization regarding the dimensions of centralization. Research very much needs to be conducted to identify and standardize dimensions of centralization. Chandler and Becker and Gordon have broken away from an undifferentiated approach to centralization; other scholars must now extend their work.

#### *Measurement*

The first selection – the previously cited NOS – used a measurement of centralization developed by the Aston Group (Pugh *et al.*, 1968, 1969). There are also other measures that focus on the distribution of power, but examine the topic from a job perspective. Centralization, of course, examines the distribution of power from the organization’s perspective. Literature which examines power from a job perspective commonly refers to it as “autonomy”, thereby creating a terminology problem for the handbook which prefers to use the autonomy label to designate the power that an organization has relative to its environment. To avoid labelling problems, the handbook will refer to “work autonomy” when examining the distribution of power from a job perspective.

Despite the different units of analysis, the literature about work autonomy is relevant to centralization. If random samples of employees from two organizations are asked to describe their work autonomy, and if one of the organizations obtains a significantly higher average work autonomy score than the other organization, then centralization is probably *lower* where the work-autonomy scores are *higher*[17]. The measure of work autonomy is approached globally and dimensionally. A global measure is provided by Iverson and Roy (1994), the second selection for centralization, and a dimensional measure is provided by Breugh – the third selection. Breugh is one of a number of scholars who has devoted a sizeable amount of effort to the development of quality organizational measures. Another such scholar (Blau) was cited in the chapter

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dealing with commitment. Research like Breugh's and Blau's constitutes a major step forward in the development of quality organizational measures.

Power

*Kalleberg et al. (1996)*

*Description.* What is relevant in the National Organizations Study (NOS) for this section are its data about decentralization (p. 76). Unlike the situation regarding autonomy, the NOS and the handbook use basically the same label for the relevant data. The handbook, however, refers to centralization rather than decentralization.

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451

*Definition.* Decentralization is not explicitly defined. Implied in the NOS measures, however, is the traditional idea of decentralization as the dispersion of organizational decision making. The NOS implies (p. 76) that their concept is similar to one used by the Aston Group and Lincoln and Kalleberg (1990), who advance traditional ideas of decentralization.

*Data collection.* Eight facets of decision making were assessed. Prior to the listing of the eight facets, the following directions were given to the respondents: "We are interested in who is responsible for making different kinds of decisions in your workplace. I am going to read a list of decision areas, and ask you to tell me who *actually* makes the *final* decision in each area. Is it the head of [establishment], someone below that, or someone at [larger organization, if establishment is part of a larger organization]? (circle all that apply)"[18]. The following list of decision areas was read over the telephone to the respondents:

- (1) The number of people employed here.
- (2) Which new employees to hire?
- (3) Using subcontractors or temporary workers.
- (4) Evaluating worker performance.
- (5) Worker promotions.
- (6) Wage rate or salary levels.
- (7) Discharging or laying off workers.
- (8) Work scheduling and overtime.

The responses to the eight items were provided in the directions given during the telephone interview. (This is question number 72a on the telephone-interview schedule.)

*Computation.* The scoring was as follows: someone at larger organization (1), establishment head and someone at larger organization (2), establishment head (3), establishment head and someone below (4), someone below establishment head (5). Judging from the mean value, the items were apparently summed and divided by eight. The unweighted mean and standard deviations are 3.46 and 0.96; the corresponding weighted scores are 2.94 and 0.65 (p. 77)[19].

*Validity.* Three of the major results (pp. 326-9) come out as hypothesized:

- (1) The larger organizations have more decentralized decision making.
- (2) Branches of organizations have less decentralization than comparable independent units.
- (3) Higher performing organizations are more decentralized relative to human resource policies and practices.

*Reliability.* The alpha coefficient is 0.91 (p. 77).

*Comments.* It is excellent to see the Aston Group's scale used. For a while it appeared as if researchers would neglect these valuable scales.

The implied idea of decentralization used by the NOS corresponds, making an adjustment for the labelling difference, to the handbook's concept of centralization. Both the decentralization and centralization labels are widely used in the literature about the distribution of power, so either label is appropriate.

Three comments are in order about the instrument. First, although used in a telephone interview, the measures can be adapted for use with self-administered questionnaires. Second, four of the decision issues refer to two ideas: subcontractors and temporary workers (number 3), wage rate or salary levels (number 6), discharging or laying off workers (number 7), and work scheduling and overtime (number 8). To avoid ambiguity, interviews and questionnaires typically seek to make each item assess a single idea. Third, the label of "worker" (questions 3, 4 and 7) has a blue-collar connotation that is best avoided. The more neutral label of "employee" should have been used[20].

The scoring does not accord with the handbook's view of organizational practices. Consistent with the use of the decentralization label, the highest score was assigned to the lowest level of the organization, that is, someone below the establishment head. The problem is that, judging from the responses, different levels can actually make the final decision. A weight of two, for example, is assigned to the establishment head *and* someone at the larger organization. Or again, a weight of four is assigned to the establishment head *and* someone below. The handbook's view is that the final decisions in organizations are generally made at a single level rather than at multiple levels. In short, the scoring does not accord with organizational practices, as viewed by the handbook.

The scale has quite acceptable psychometric properties regarding the extent to which matters of personnel policy are decentralized. Personnel policy, however, constitutes but one area of organizational operation. Most of the organization's strategic decisions, for example, are in areas other than personnel policy. The measure of decentralization is, therefore, too narrow. It is possible that organizations which are decentralized in one area, such as personnel policy, will be decentralized in other areas. But this is an empirical question. The NOS's measure is a good beginning in developing a measure of power's dispersion within an organization, but it needs to be extended.

*Source.* Kalleberg *et al.* (1996).

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*Iverson and Roy (1994)*

*Description.* Iverson and Roy's study was previously described in the chapter on internal labour markets and the description need not be repeated. What is pertinent about Iverson and Roy's study for this section is their data about "centralization". The handbook interprets their data about centralization as measuring work autonomy; the rationale for this interpretation will become clear when their measures are described.

*Definition.* Centralization is defined as "the extent to which power is concentrated in an organization" (p. 19).

*Data collection*[21]. Five items were used to collect information about centralization:

- (1) How much *freedom* do you have as to *how* to do your job?;
- (2) How much *freedom* do you have as to *what you do* on your job?
- (3) How much does your job allow you to *make a lot of decisions on your own*?
- (4) How does your job allow you to *take part in making decisions* that affect you?
- (5) How much *say* do you have over what happens on your job?

(These five items are question numbers 20-24 on the Iverson and Roy questionnaire.) The first two questions had the following five responses: "a great deal of freedom, quite a lot, some, very little, no freedom at all". For the third and fourth questions, the following five responses were used: "almost all the time, most of the time, sometimes, seldom, and never". The last question had the following five responses: "a great deal, quite a lot, some, very little, none at all".

*Computation.* The five responses were scored so that a higher score indicated less power. In the first two questions, for example, "no freedom at all" was scored as five. This scoring is used because Iverson and Roy label their concern as "centralization" and not "work autonomy". The five item scores were summed to obtain a total scale score. The mean and standard deviations are 13.88 and 4.17 respectively.

*Validity.* Two sets of data are germane to validity. First, Iverson and Roy's confirmatory factor analysis (CFA) was described in the chapter on internal labour markets and this description need not be repeated. What is essential to note is that Iverson and Roy's measures possess quite acceptable discriminant and convergent validity when analysed with their 17 other exogenous determinants. Second, Iverson and Roy predicted that centralization would decrease satisfaction. This decreased satisfaction would then indirectly depress behavioural commitment through attitudinal commitment and job search. The results indicate that centralization depressed satisfaction and indirectly lowered behavioural commitment. Both sets of data demonstrate the validity of Iverson and Roy's measures.

*Reliability.* The alpha coefficient is 0.86.

*Comments.* Work autonomy, rather than centralization, would be a more accurate label for Iverson and Roy's concept. Three of their five items explicitly refer to the job rather than to the organization. Work autonomy is relevant to centralization, since the two concepts refer to the distribution of power. However, the two concepts have different units of analysis and should be distinguished by the use of different labels.

The Iverson and Roy measure was previously referred to as a global measure. However, the first item appears to refer to what Breugh will later term in his discussion of facet measures as the "method" of work. It is important to note that the Iverson and Roy measure was subjected to a CFA analysis which indicated quite acceptable convergent and discriminant validity. The respondents apparently perceived the first item as basically similar to the remaining four items.

Breugh distinguishes work autonomy from independent work. He believes these are two different concepts that are often confused. Only Iverson and Roy's third item taps independent work, and then only slightly. Iverson and Roy, therefore, do not confuse work autonomy and independent work.

Iverson and Roy's measure possesses quite adequate psychometric properties. Especially important is their CFA. One weakness of the generally impressive NOS is that its measures are not subject to CFA along with other measures. The NOS uses CFA but only on one concept at a time. It is more important to do a CFA on a set of concepts, such as common exogenous or endogenous determinants.

*Source.* Iverson and Roy (1994).

*Breugh (1985), Breugh (1989) and Breugh and Becker (1987)*

*Description.* The purpose of these three articles was to report on the development of a measure of work autonomy. Six studies – three of employees and three of students – were described in the three articles. The employee samples were from the production department of a large midwestern organization ( $N = 97$ ), a division of a large multinational chemical company ( $N = 312$ ), and a large multinational corporation ( $N = 9,421$ ). The students were both undergraduates and graduates. Business students composed the undergraduate sample ( $N = 114$ ); the graduate students were MBAs attending evening classes at a medium size, midwestern university ( $N = 93$  and  $N = 40$ ). To simplify this description, the three articles will be treated as if they had a single author, Breugh.

*Definition.* Work autonomy is defined as "...the degree of control or discretion a worker is able to exercise with respect to work methods, work scheduling, and work criteria" (p. 556). "Methods" is defined as "the degree of discretion... individuals have regarding the procedures... they utilize in going about their work" (p. 556). "Scheduling" is defined as "the extent to which workers feel they can control the... sequencing... of their work activities" (p. 556). Finally, "criteria" is defined as "the degree to which workers have the

ability to... chose the criteria used for evaluating their performance” (p. 556). These three facets of autonomy are based on a literature review.

Breaugh distinguishes work autonomy from work interdependence. The extent to which an employee has discretion relative to his/her work must be distinguished from the extent to which an employee can do his/her work independently of other employees. Failure to distinguish autonomy from interdependence has, according to Breaugh, weakened the measurement quality of autonomy in past research. The basis of this distinction is the work of Kiggundu (1983).

*Data collection*[22]. Nine items were used to collect data to measure work autonomy. The respondents were instructed to write a number beside each item to indicate their agreement or disagreement with the item. The numbers and the agree-disagree items were as follows:

How much do you agree with this statement?

1	2	3	4	5	6	7
Disagree Strongly	Disagree	Disagree Slightly	Neutral	Agree Slightly	Agree	Agree Strongly

The following nine items were used:

- \_\_\_ (1) I am allowed to decide how to go about getting my job done (the methods to use).
- \_\_\_ (2) I am able to choose the way to go about my job (the procedures to utilize).
- \_\_\_ (3) I am free to choose the method(s) to use in carrying out my work.
- \_\_\_ (4) I have control over the scheduling of my work.
- \_\_\_ (5) I have some control over the sequencing of my work activities (when I do what).
- \_\_\_ (6) My job is such that I can decide when to do particular work activities.
- \_\_\_ (7) My job allows me to modify the normal way we are evaluated so that I can emphasize some aspects of my job and play down others.
- \_\_\_ (8) I am able to modify what my job objectives are (what I am supposed to accomplish).
- \_\_\_ (9) I have some control over what I am supposed to accomplish (what my supervisor sees as my job objectives)” (Breaugh, 1985, p. 570).

The first three items assess the “method” facet of work autonomy, the second three items collect data pertinent to the “scheduling” facet, and the final three items focus on “criteria”.

*Computation.* The scoring for the agree-disagree responses was indicated when the data collection was described. A total score for each of the three facets was obtained by adding the scores for a facet and dividing by three. Four means and standard deviations were used to compute average means and standard deviations[23]. For the three facets, the average means are methods

(5.28), scheduling (4.88), and criteria (3.90); the equivalent statistics for the standard deviations are methods (1.36), scheduling (1.42), and criteria (1.47).

*Validity.* Five sets of data are pertinent to validity. First, there are matrices of correlations among the three facets of work autonomy. If these facets are different, the correlations will be low. The average correlations for the different combinations of facets are as follows: methods/scheduling (0.42), methods/criteria (0.30), scheduling/criteria (0.39)[24]. Second, there are data, from an experimental study, gauging the extent to which self reports of autonomy are consistent with objective changes in autonomy[25]. The results indicate that the two sets of data are consistent. Third, there is information indicating the correlations of work autonomy with "dependent variables with which work autonomy should be associated"[26]. All of the correlations are as expected. Fourth, there are the results of one exploratory and two confirmatory factor analyses (CFA). The CFA reported in the 1989 study was based on a large sample ( $N = 9,421$ ). In each of the factor analyses, the hypothesized three facets are found[27]. Fifth, there are subgroup comparisons for union/non-union employees and supervisors/non-supervisors. It is predicted that non-union employees and supervisors would have more work autonomy than union employees and non-supervisors. The results are as anticipated.

*Reliability.* Reliability was assessed with alpha and test-retest coefficients. Five alphas are available for computing a mean score for each facet. The average alphas are as follows: method (0.92), scheduling (0.86), and criteria (0.85). The test-retest coefficients were from the first study in the 1985 report. The three coefficients are as follows: method (0.76), scheduling (0.71), and criteria (0.65). The work autonomy scales were administered to 22 of the 47 participants with a one-month interval.

*Comments.* It is rare in organizational measurement research to have three reports on a single measure. Breaugh's research brings to mind the extensive work of Smith and her colleagues (1969) on the development of the job descriptive index. It is hoped that this type of research will become more common in the future.

Breaugh does not offer a definition of work autonomy that embraces his three facets. Yet he admires the work of Turner and Lawrence (1965) who advanced a definition of work autonomy that includes Breaugh's three facets. A slightly modified version of Turner and Lawrence's definition is that work autonomy is the amount of discretion that an employee has in carrying out his work activities. Breaugh even cites the Turner and Lawrence definition in his report (pp. 553-4), but does not use it.

The handbook agrees with Breaugh in his very positive evaluation of his scale. Seldom is such an amount of quality data presented in support of a measure[28]. The handbook, however, has three qualifications regarding this impressive research. First, Brady *et al.* (1990) in their research on 94 dental assistants found a single dimension of work autonomy rather than the three facets reported by Breaugh. However, Brady *et al.* did not do a confirmatory



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factor analysis and their sample was small. So the study by Brady *et al.* can be partially discounted. Second, Breugh did not do the type of confirmatory factor analysis (CFA) performed by Iverson and Roy in their previously-cited study. Iverson and Roy did a CFA for work autonomy and 17 other exogenous determinants, whereas all of Breugh's CFAs were restricted to work autonomy. It is important to see if work autonomy has validity in comparison with other determinants commonly used in causal models. Third, Breugh believes there is a role for global measures of autonomy, but he generally views such measures with disfavour. There is a long tradition in organizational research which supports the use of global measures – Iverson and Roy's research is an example of such work – and such measures should continue to be used[29]. Fourth, Breugh makes a convincing case that there are three facets to work autonomy. However, he does not demonstrate that these different facets have different organizational consequences. If the three facets, for instance, have different impacts on commitment, involvement, and satisfaction, then this would really indicate their importance in organizational analysis. A single project, even when extended over three articles, cannot do everything, and Breugh has accomplished a great deal.

*Source.* Breugh (1985), Breugh (1989), and Breugh and Becker (1987).

### **Bases of power**

#### *Definition*

Bases of power refers to the reason one person conforms to the intentions of another person. The person whose intentions are followed can be either a supervisor or a peer; the supervisory relationship is the usual focus of research. Most of the empirical research which focuses on this topic uses the French and Raven (1959) terminology, research which comes from the Survey Research Center (SRC) of the University of Michigan. Weber provides an alternative conceptualization of the bases of power in his discussion of the dimensions of authority (Bendix 1960, pp. 289-449), but his work in this area has not been used by scholars doing empirical research. It was the social psychologists at the SRC, working in the Lewinian tradition[30], who empirically examined the reason one person conforms to the intention of another.

#### *Measurement*

Since 1968, Bachman's research (1968) has been the most widely cited measure of the French and Raven topology. The 1986 edition of the measurement handbook, for example, used Bachman's research as a selection. However, three scholars – Schriesheim, Podsakoff, and Hinken – have recently conducted research criticizing Bachman's use of single-item, ranking scales. One of their articles is used as the selection for this material on the bases of power. The source material at the end of the selection indicates two other relevant research articles by these three scholars.

*Hinkin and Schriesheim (1989)*

*Description.* The purpose of this study was to report on research which developed and tested new measures for the French and Raven topology of power. Three samples were used in the research. The first sample (termed Sample A) consisted of 251 upper-level undergraduates enrolled in two different business courses at a large southern US university. The students worked an average of 22 hours per week and were employed in a wide diversity of organizations. The second sample (B) consisted of 375 full-time employees of a large southern US psychiatric hospital. Sample C was made up of 220 part-time MBA students taking organizational behaviour and business policy classes at a medium-sized southern US university. The MBA students were all full-time employees. Questionnaires were administered to the respondents in their natural (classroom or work) settings during normal hours. The handbook will mostly focus on the testing of the scales rather than their development.

*Definition.* This selection does not explicitly define power. However, a later article (Schriesheim *et al.*, 1991) offers an explicit definition of power as "... the inferred potential to exercise influence" (p. 106). The present selection offers the following definitions for the bases of power:

*Reward power* is the ability to administer to another things he or she desires or to remove or decrease things he or she does not desire.

*Coercive power* is the ability to administer to another things he or she does not desire or to remove or decrease things he or she does desire.

*Legitimate power* is the ability to administer to another feelings of obligation or responsibility.

*Referent power* is the ability to administer to another feelings of personal acceptance or approval.

*Expert power* is the ability to administer to another information, knowledge, or expertise (p. 563).

These definitions reformulate the definitions advanced by French and Raven[31].

*Data collection.* Twenty items were used to collect information about the bases of power. The following instructions preceded the 20 items: "Below is a list of statements which may be used in describing behaviours that supervisors in work organizations can direct towards their subordinates. First carefully read each descriptive statement, thinking in terms of your supervisor. Then decide to what extent you agree that your supervisor could do this to you. Mark the number which most closely represents how you feel. Use the following numbers for your answers: (5) = strongly agree; (4) = agree; (3) = neither agree nor disagree; (2) = disagree; (1) = strongly disagree" (p. 567).

After the instructions, the respondents were given the following lead-in: "My supervisor can..." (p. 567)[32]. The 20 statements were then presented:

(Reward power)

02. increase my pay level;

27. influence my getting a pay raise;

- 
33. provide me with special benefits;  
 38. influence my getting a promotion;  
 (Coercive power)
04. give me undesirable job assignments;  
 18. make my work difficult for me;  
 21. make things unpleasant here;  
 22. make being at work distasteful.  
 (Legitimate power)
07. make me feel that I have commitments to meet;  
 30. make me feel like I should satisfy my job requirements;  
 39. give me the feeling I have responsibilities to fulfill;  
 42. make me recognize that I have tasks to accomplish.  
 (Referent power)
03. make me feel valued;  
 06. make me feel like he/she approves of me;  
 08. make me feel personally accepted;  
 12. make me feel important.  
 (Expert power)
16. give me good technical suggestions;  
 19. share with me his/her considerable experience and/or training;  
 31. provide me with sound job-related advice;  
 40. provide me with needed technical knowledge (p. 567)[33].

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*Validity.* Four sets of data are relevant for validity. First, a confirmatory factor analysis was conducted on the 20 items for Samples A, B, and C[34]. The results demonstrate the hypothesized factor structure, that is, the items for the different bases of power only load strongly together. Second, scale intercorrelations were computed for the three samples. Although some large and significant relationships exist within some of the items for the different bases of power, the overall correlations demonstrate a meaningful amount of independence. Third, a factor analysis was performed for the three samples and the 15 commitment items taken from the work of Porter and his colleagues (1974)[35]. To demonstrate discriminant validity, the items to measure the bases of power should load separately from the commitment items. The results indicate no inappropriate loadings and the power scales are interpreted as distinct from commitment. Fourth, zero-order and partial correlations for the three samples were computed for the power scales and satisfaction/commitment. Satisfaction was measured with items from the Minnesota Satisfaction Questionnaire. Although the results are different in major ways from past research, Hinken and Schriesheim are of the opinion, because of the improvement they made on past research, that the measures demonstrate acceptable concurrent validity.

*Reliability.* Coefficient alpha was computed for each base of power for the three samples. The average coefficients for the samples are as follows: reward (0.78), coercive (0.84), legitimate (0.86), referent (0.87), and expert (0.86).

*Comments.* This study, plus its two companion studies, is a welcome addition to the literature, because it offers a cogent and sustained critique to the French and Raven tradition of research on the bases of power. Not only do Schriesheim and his colleagues critique the French and Raven tradition, but they develop and test an alternative measure. Schriesheim *et al.*, together with Blau and Breaugh, are major scholars working in the area of organizational measurement[36].

Schriesheim *et al.* do not offer an extensive discussion of power, so it is difficult to compare their definition with the handbook's. The idea of "potential influence", however, is different from the handbook's "production of intended effects". There is nothing about "potential" in the handbook's definition; there is only the production of "effects". Schriesheim *et al.*'s 20 items, however, are much more consistent with the handbook's view of power, since these items strongly focus on effects. The handbook offers no definition of the bases of power. It is especially commendable that this report carefully sets forth its reformulated definitions of the bases of power. They clearly recognize that quality measurement research depends on clear, conceptual analysis.

Their instrument clearly moves away from the single-item, ranking measures used in the French and Raven tradition. The *Journal of Applied Psychology* is to be applauded for its willingness to reproduce the instrument in the article's appendix. Many journal editors resist instrument reproduction.

The handbook agrees that the measures "demonstrate adequate psychometric properties..." (p. 566). More measurement work must be done, as the authors indicate, but a solid foundation has begun for new research on the bases of power.

*Sources.* In addition to Hinkin and Schriesheim (1989), also relevant are Podsakoff and Schriesheim (1985) and Schriesheim *et al.* (1991).

#### Notes

1. This definition is based on the work of Wrong (1970, p. 41, 55). There is an immense literature on power, and no useful purpose is served by citing even the major work in this tradition. Excellent reviews of the literature are provided by Bacharach and Lawler (1980) and Pfeffer (1981).
2. The following sources stress intended effects: Goldhammer and Shils (1939); Tannenbaum (1966, p. 84); Wrong (1970, p. 41, 55).
3. Legitimacy is a central concern in Weber's important work on power (Bendix, 1960, pp. 289-459).
4. Clegg first impressed on the author the importance of indirect forms of power in organizations. Clegg has published (1975) a major work on power.
5. Discussions of the "amount of power" in the literature describing the control graph approach to the measurement of centralization illustrate the idea that power is not a zero-sum concept. Markham *et al.* (1984) has a helpful discussion of the control graph.

6. This definition of autonomy is based on the work of Selznick (1953, pp. 29-37). Major studies of autonomy have been conducted by Selznick and his colleagues. Van de Ven and Ferry (1980, p. 307) also use this definition.
7. The label of work autonomy, rather than job autonomy, is used because Breaugh uses this label in his research. Breaugh's research on work autonomy will be discussed later in the chapter.
8. Mayer and his colleagues, especially Scott, are key figures in the development of the institutional approach to the study of organization. Selznick was a forerunner to the institutional approach. See Powell and DiMaggio (1991) for a discussion of this approach.
9. These responses come from the telephone-interview schedule and not Kalleberg *et al.* (1996).
10. These are also from the telephone-interview schedule.
11. The schedule referred to "ORG" rather than "establishment".
12. Items on a schedule or interview are often scored as 1, 2, and 3, for example, to facilitate data entry, but are later recoded, when necessary, for analysis.
13. The handbook uses "centralization" to refer to the distribution of power because of the widespread use of this label in the study of organizations. Only "participative management", or some other variant of participation, is used as widely as centralization. Centralization has a longer tradition in the literature than participation, a label that stems from the human relations research of the 1930s. If possible, the handbook prefers to maintain the traditional label to promote standardization of labels and measures.
14. The traditional labels here are class, status, and power (Mayer and Buckley, 1970); Weber is the source of these labels. For social stratification, the handbook mostly departs from tradition, because organizational scholars are more familiar with pay and prestige than with class and status. The latter two terms are more common among sociologists; the intended audiences for the handbook, organizational scholars and their students, extends considerably beyond the sociological community.
15. A helpful review of the most important measures of leadership is provided by Cook and his colleagues (1981).
16. The handbook could, of course, equally well illustrate this point with the authoritarian leader.
17. To make work autonomy more relevant to centralization, this random sample of employees should probably be stratified by income.
18. These directions come from Kalleberg *et al.* (1996, p. 77) rather than from the telephone-interview schedule.
19. For construction of the scale, values for "don't know" and "does not apply" responses were regression-imputed, if the respondents answered four or more of the other decentralization items. The "does not apply" response was excluded in the handbook's section on data collection.
20. Table 4.3 (Kalleberg *et al.*, 1996, p. 77) refers to "employee" and not "worker". It is the telephone interview schedule, which is the source of the decision areas listed under data collection, which refers to "workers".
21. These questionnaire items were supplied by Professor Iverson.
22. Professor Breaugh graciously supplied information about instruction and scoring for his scales. The scales are reproduced in the Appendix in the 1985 and 1989 articles.
23. The four means and standard deviations come from Studies One and Two from the 1985 article, Study One from the 1987 article, and from the 1989 article. The means and standard deviations from the experimental study – Study Two of the 1987 article – was excluded, because it was too complicated to summarize briefly.

24. Data about these average correlation coefficients come from Studies One and Two of the 1985 article, Study One and Two from the 1987 article, and from the 1989 article. The correlations were substantially higher in the 1989 article – an observation noted by Breugh.
25. This is Study Two in the 1987 article.
26. This information is found in the 1985 article for both studies.
27. The reader is referred to the 1989 article for very detailed information about the CFA.
28. *Human Relations* is to be congratulated for publishing three articles on a single measure. Even though the articles report research which was very competently conducted, few journals would be willing to publish the three articles.
29. Research on satisfaction reported in Chapter 24 also illustrates the use of global measures.
30. The reference is, of course, to Kurt Lewin, the social psychologist. Marrow's biography (1969) is relevant.
31. Schriesheim and his colleagues (1991) also propose a second measure of the French and Raven topology. The Hinkin and Schriesheim measure (1989) is used, because it reports the conceptual reformulation of French and Ravan's topology. Schriesheim *et al.* (1991) regard the conceptual reformulation as an improvement and recommend using the 1989 article as the basis for further research.
32. The items cited in the handbook are grouped for reader convenience; the item numbers indicated correspond to the order used on the original survey questionnaire.
33. The instructions stated that the respondent is supposed to "mark the number which most closely represents how you feel". Yet the instructions in the Appendix do not indicate how this marking is supposed to be done. Researchers who replicate this research will have to provide a way for the respondents to mark the appropriate numbers. The *Journal of Applied Psychology* is to be congratulated for allowing the inclusion of this Appendix.
34. An exploratory factor analysis was also conducted on the three samples.
35. This is the measure of commitment by Porter and his colleagues described in Chapter 4.
36. Breugh's research was described earlier in this chapter. Chapter 4 on commitment has a discussion of Blau's research.

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## 21. Prestige stratification

Prestige  
stratification

463

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### **Definition**

Prestige stratification is the degree to which rank differences exist within an organization. Military organizations are well known for their high degree of prestige stratification. All soldiers, for instance, wear uniforms that clearly indicate their status in the organization. Revolutionary change in Communist countries, such as the USSR and China, was accompanied by reduced prestige stratification in these countries' organizations. Examples are the emphasis on a common dress for everyone and widespread use of the term "comrade". Material relevant to prestige stratification is also found in discussions of status hierarchy, rank consciousness, and rank emphasis.

Prestige in organizations, it should be emphasized, is assigned to occupational roles and not to individuals. It is the "chief executive officer", whoever he or she may be, who has the corner office, limousine, private toilet, secretary, and so forth. When the chief executive leaves the role, the individual no longer has access to the symbols of prestige linked to the office. Assignment of prestige to roles is central to the meaning of Weber's rational legal authority.

### **Measurement**

Organizational scholars frequently refer to prestige stratification, but they rarely offer any measures of the concept. The most they typically offer is examples, such as the use of uniforms to indicate status differences. This measurement selection will indicate how sociologists, who have done extensive work in this area, commonly assess prestige stratification (Siegel, 1971). A modified version of this measure can be used in an organizational study. Following the selection, the handbook will offer some questionnaire items designed to collect data to measure prestige stratification.

### **Siegel (1971)**

#### *Description*

The goal of this research was to obtain the prestige ranking of over 400 occupations in the US Census three-digit occupation scheme; the research represents an extension of the work begun by The National Opinion Research Center (1947). Three surveys were conducted – in 1963, 1964, and 1965 – on samples of the US population.

#### *Definition*

The prestige of an occupation is defined as the general public estimation of the social standing of that occupation.

#### *Data collection*

Two strategies were used to establish the prestige ranking. In the first, respondents were asked to sort each occupation into one of nine boxes (this is a

ladder format, representing high to low social standing). In the second strategy, the respondents were asked to rate the “general standing” of each occupation by placing it on a five-point score ranging from excellent to poor.

*Calculation*

These rankings by respondents were tabulated to arrive at a prestige scale that has a theoretical range of zero to 100. It is not necessary to describe in detail the computational procedures, because researchers who use it need not go through this process of ranking occupations. The scale is now available in terms of the prestige score associated with each of the US Census three-digit occupation codes. Thus, what the researcher needs are the three-digit codes for the occupations of the individuals in this study. The best discussion of how to obtain information about occupations and how to determine which three-digit codes to assign is in Featherman and Hauser (1977). A complete and updated listing of three-digit occupations, their codes, and the Siegel prestige scores is available in The National Opinion Research Center's *General Social Surveys, 1978-1984: Cumulative Codebook* (1984). It is important to emphasize that obtaining the necessary occupation data is not simply a matter of asking “What is your job?”

*Validity*

The construct validity of this measure is clearly not in question, given that hundreds of studies in stratification have shown it to be related to other variables in the hypothesized manner. Some have questioned whether it actually measures prestige, suggesting that it would be better termed a measure of the more general concept of socioeconomic status. This argument is made because, when raters are asked about the criteria used to rank the occupations, they most often give monetary and education-related criteria.

*Reliability*

There is substantial evidence regarding the reliability of the scale (Hodge *et al.*, 1964, 1966; Siegel, 1971). It is stable over a span of several decades, over various subpopulations of raters defined by varying socioeconomic characteristics, across geographical regions, and across numerous societies.

*Comments*

The measurement work on prestige rankings of occupations— and more generally, on measures of socioeconomic status— has been vitally important in the sociological study of stratification. A general discussion of this is available in Mueller and Parcel (1981). The emphasis on the “general standing” of the occupation has been viewed as imprecise by some, but since the reliability has been so high, there is not much of a basis for arguing that the frame of reference should be changed.

It is important to stress that use of this measure requires complete information on the occupations of the organization employees. “Complete”



means that there is sufficient information to assign one of the three-digit occupation codes. Researchers unaware of this necessity typically do not obtain enough information to use the Siegel scale.

Just obtaining the prestige scores for the occupations in the organization does not reveal much about the degree of prestige stratification in the organization. In fact, the distribution data (mean, median, variance, range, and so forth) are not acceptable measures of stratification. The handbook's recommendation is that the prestige data obtained in the manner described above be used in computing the Gini index, the Theil index, or the coefficient of variation. In short, the handbook suggests that the measures of pay inequality be used to obtain summary measures of prestige inequality.

As mentioned, there is some question as to whether the Siegel scale captures only prestige, rather than a general socioeconomic status concept. The handbook does not view this as a critical issue, since the correlations among these various measures are quite high. The cross-population and over-time reliability of this measure has been clearly established.

*Source*  
Siegel (1971).

#### **Additional measurement suggestions[1]**

The following lead-in statement should precede the questionnaire items: "Indicate the extent of your agreement or disagreement with the following statements dealing with *rank differences* in your organization. (Managers in the following statements means everyone from the first-level supervisor to the chief executive officer.)"

The lead-in statement should be followed by eight questionnaire items:

- (1) Managers can generally be distinguished by the kinds of clothes they wear.
- (2) At work, managers mostly eat with other managers.
- (3) Managers and non-managers are usually on a first-name basis.
- (4) Managers and non-managers are often close friends.
- (5) The titles of managers are generally indicated after their names.
- (6) It is usually not necessary to check with a manager's secretary before seeing the manager.
- (7) Titles are typically indicated on the doors of managerial offices.
- (8) Employees are usually listed alphabetically on various types of employee lists.

Each of the eight questionnaire items should have five responses: strongly agree, agree, neither agree or disagree, disagree, and strongly disagree.

Strongly agree should be scored as five, and strongly disagree should be scored as one for items (1), (2), (5), and (7). For items (3), (4), (6), and (8), strongly

agree should be scored as one and strongly disagree should be scored as five. The scores should be summed to obtain a score for the scale, whose range extends from eight to 40. A score of 40 indicates the highest possible amount of prestige stratification.

Since the scale has not been used, the handbook has no data about its validity or reliability. The hope is that publication of the scale will result in its use.

The information necessary to measure prestige stratification could be collected by observation or records, rather than by questionnaire, as proposed. If the organization is fairly small, the data can reasonably be collected by observation. Small units in large organizations can, of course, be observed. Records should yield some data about prestige differences, such as whether the employees are usually listed alphabetically or by rank. Most of the data, however, will not be available on records. The handbook recommends use of the questionnaire, validated by observational data collected on small units, preferably small units in organizations of different sizes.

**Note**

1. The handbook thanks John Hill, formerly a graduate student in accounting at the University of Iowa, for assistance in constructing this measure. Hill is now an accounting professor at Indiana University (Bloomington).

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## 22. Productivity

### Definition

Productivity is the ratio of output to input in an organization (Kendrick, 1977, p. 1). Output consists of the goods and services produced by an organization, whereas input consists of the resources (land, labour, plant, and equipment) used to produce the outputs. The more output that can be produced with a given level of input, the greater the productivity; similarly, the less input needed to produce a designated level of output, the greater the productivity. Material about productivity is often found in discussions of efficiency.

Productivity must be distinguished from effectiveness. (Melman, 1956, 1958). Organizations that have high productivity will very likely be able to achieve their goals, that is, to be effective. A business firm that is a low-cost producer, for instance, will probably be very profitable. A depressed market may reduce profitability, however, despite low production costs per unit of output. Business firms that have low productivity may also be very profitable. A defence contractor in the USA may have high unit costs but, as a result of a very favourable contract with the Department of Defense, be very profitable. Although productivity and effectiveness probably covary, the two concepts are different and should not be used synonymously.

Organizational scholars do not give much attention to productivity. Major texts, for example, have extensive discussions of effectiveness, but allocate little space to productivity (Hall, 1982; Scott, 1981). Although the handbook mostly restricts itself to the concepts typically discussed by organizational scholars, when a concept that the handbook believes to be important is not discussed, it will be included in the handbook. It is clear that productivity is of major significance to a society, and since organizations are the major means of production in modern societies, the handbook believes the concept should be a central one in the study of organizations.

### Measurement

Measurement discussions of productivity among organizational scholars are usually less than adequate. Output per employee, for example, is often the measure used in these discussions. This is a clearly inadequate measure, since output per employer ignores the varying lengths of time employees work. Because of this, the material in this section is based on the work of economists, who generally use the economy or industry as their unit of analysis[1]. There are many measures of productivity in the literature, and rather than review these, the handbook will present what appears to be a viable measure and offer a rationale for its use[2].

The recommended measure is cost per unit of output, that is, the organization's output divided by the organization's costs. Four features of this measure are noteworthy. First, it takes into account all costs incurred in producing the organization's output. The widely used output per hour worked,

the index of labour productivity, only takes into account inputs contributed by labour, ignoring such inputs as land, plant, and equipment. Costs associated with plant and equipment are especially important in producing an output and should not be ignored. Second, cost per unit of output takes into account the input contributed by all employees. Some measures of productivity only consider the inputs from production employees, ignoring the indirect input from the growing number of employees of the administrative staff. Administrative staff employees should be included, since they are part of the organization's labour costs. Third, the recommended measure takes into account the amount of time worked by the employees. Since employees work varying amounts of time, any measure that limits itself to the *number* of employees, as does output per employee, will represent labour input inaccurately. An organization's labour costs will reflect the total amount of time worked by the employees. Fourth, cost per unit of output takes into account the quality of the labour expended in production. Output per hour worked treats each hour worked the same, whether the hour was worked by an unskilled labourer or by a highly skilled craftsman. Since the craftsman is paid more than the labourer, the cost of the craftsman's time will be greater than the cost of the labourer's time. In short, an hour worked by a craftsman will count more in the cost per unit of output than an hour worked by a labourer. The assumption is that the differences in pay reflect differences in quality of input.

Cost per unit of output ignores improvements in the product that occur through time. Automobiles have improved enormously since the turn of the century, but none of these improvements are captured by cost per unit of output. An automobile produced in 1900 is treated the same – it counts as one unit of output – as an automobile produced in 1997. No measure of productivity assesses changes in product improvement through time, so the recommended measure shares this deficiency with all the measures of productivity. Since prices are involved in the calculation of costs, historical comparisons of productivity will naturally have to adjust for changes in the price level.

An implication of cost per unit of output is that comparisons for productivity can only be made between organizations whose output is the same. Consider hospitals. Two voluntary, short-term, general hospitals might properly be compared, since the output of both is reflected in the number of patient-days of care provided. The productivity of a voluntary hospital cannot properly be compared with the productivity of a university hospital, however, since the outputs of the two hospitals are very different. University hospitals care for patients, but they also train health-care personnel and conduct research. In short, it is not possible to construct a general measure of productivity, since the outputs of organizations vary so greatly.

The inability to construct a general measure of productivity is important, because a major goal of this handbook is to promote standardized measurement and thereby facilitate the growth of theory through easy comparison of results. The lack of standardization, however, does not destroy the possibility of building theoretical models. If a model is accurate, then it should be able to

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withstand tests with different measures. Precise comparison may not be possible with different measures, but one can assess with different measures whether or not the model is basically supported by the results. There is even an advantage in such comparisons, since the traditional preference is for models that are not method-specific. Just as scholars are suspicious of models that are only confirmed with, for instance, questionnaire data, they are also suspicious of models that are only confirmed with a single, standardized measurement.

Questionnaires, interviews, and observations are of limited utility in collecting data to measure productivity. The data for costs per unit of output will be available in an organization's records. Costs of land, labour, plant, and equipment are regularly tabulated by organizational employees, so collection of this information should pose no major problem. It will be more difficult to collect data about output, especially for service organizations. Universities, for instance, usually know how many different students they enroll during a year, but this is not a valid measure of output, since the amount of instruction received by each student varies greatly. Some students spend three hours per week being instructed, whereas many spend 15 hours or more. It will take a considerable amount of work to ascertain the student-hours of instruction provided by a university, a much better measure of output than the number of students enrolled. Student-hours of instruction will be available somewhere in the records, however, and must be extracted and used to measure productivity properly.

**Notes**

1. The unit of analysis is usually the *private* economy and groups of industries.
2. The handbook has found the work of Fabricant (1969), Kendrick (1977), and Brinkerhoff and Dressler (1990) to be especially helpful.

## 23. Satisfaction

### Definition

Satisfaction is the degree to which employees have a positive affective orientation towards employment by the organization[1]. Dissatisfied employees will, of course, have a negative affective orientation towards the organization. Various dimensions, or facets, of satisfaction are commonly distinguished. Work, supervision, pay, promotion, and coworkers are widely used dimensions[2]. Reference is often made to “job satisfaction” rather than to “satisfaction”[3].

Satisfaction is an example of proper dimensionalization. The different dimensions are part of a more general concept. Satisfaction with work, for instance, is included within the domain of affective orientation towards employment by the organization.

There is a substantial literature which pertains to satisfaction, but is not discussed under this label. Examples of other labels are morale, mood, positive affect, negative affect, and well-being[4]. The handbook has difficulty distinguishing the concepts referred to by these labels from satisfaction; therefore, separate chapters are not devoted to them. A stronger case must be made for the distinctiveness of mood, positive affect, negative affect, and affective well-being.

The three major social psychological concepts in the handbook are satisfaction, commitment, and involvement. It is assumed that these three concepts are distinctive, and there are data supporting this assumption (Brooke *et al.*, 1988; Mathieu and Farr, 1991). Although satisfaction, commitment, and involvement use the individual as the unit of analysis, they are included in this handbook of organizational measurement, because they are concepts commonly used by organizational scholars. “Organizational” in the handbook’s title refers to research conducted by scholars studying work organizations.

### Measurement

Satisfaction is measured globally and dimensionally. The first four selections – Brayfield and Rothe (1951), Dunham and Herman (1975), Quinn and Staines (1979), and Ironson *et al.* (1989) – provide global measures of satisfaction. The last two selections – Weiss *et al.* (1967) and Smith *et al.* (1969) – present dimensional measures. It is assumed that both global and dimensional measures are appropriate ways to measure satisfaction. The measures are different but both are appropriate.

The measures in this chapter embody different approaches to the measurement of satisfaction. Consider first the global measures. The Brayfield and Rothe measure is a standard questionnaire measure, with the widely used Likert response pattern of agree-disagree items. Dunham and Herman’s measure uses pictures to assess satisfaction. Quinn and Staines use an interview, rather than a questionnaire, to collect their data. Finally, Ironson and her colleagues base their questionnaire on the format used by the Job

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Descriptive Index (JDI). Consider next the dimensional measures. Weiss *et al.* ask the respondents *directly* about satisfaction – note the term “feel” in their lead-in statement – whereas Smith *et al.* (JDI) collect data pertinent to satisfaction *indirectly*. The two dimensions used by Weiss and his colleagues, intrinsic and extrinsic, also differ from the five dimensions used by Smith and her colleagues (work, supervision, pay, promotion, and coworkers). Finally, the dimensions used by Weiss *et al.* can be combined into a measure of general satisfaction; such a combination is not possible with the JDI. Provision of a diversity of measures is a guide the handbook uses in selecting its scales.

**Brayfield and Rothe (1951)***Description*

The purpose of this study was to develop a scale of job satisfaction. Although different groups were used in this development, the final version was administered to only two samples. One sample consisted of 231 female office employees in typing, stenographic, clerical, and accounting positions. These office employees were mostly young, unmarried women without dependants. The average woman in the sample had completed 12 years of schooling, had been in her present job for more than one year, and had been employed by the company for one and three-quarter years. The second sample consisted of 91 adult night-school students in classes in Personnel Psychology at the University of Minnesota during 1945 and 1946. The group included 49 males and 42 females. The age range was from 22 to 54, with a median of 35 years. Practically the entire sample was engaged in either clerical, semiprofessional, professional, or managerial occupations. Both samples, therefore, consisted of white-collar employees.

*Definition*

There is no explicit definition of job satisfaction in the article. However, the questionnaire refers to “how people feel about different jobs” (p. 309). The feelings range from highly satisfied to lowly satisfied.

*Data collection*

A questionnaire was used to collect the data. The following lead-in preceded the questions: “Some jobs are more interesting and satisfying than others. We want to know how people feel about different jobs. This blank contains 18 statements about jobs. You are to cross out the phrase below each statement which best describes how you feel about your present job. There are no right or wrong answers. We should like your honest opinion on each one of the statements”[5].

The 18 statements were as follows:

- (1) My job is like a hobby to me.
- (2) My job is usually interesting enough to keep me from getting bored.
- (3) It seems that my friends are more interested in their jobs.
- (4) I consider my job rather unpleasant.

- (5) I enjoy my work more than my leisure time.
- (6) I am often bored with my job.
- (7) I feel fairly well satisfied with my present job.
- (8) Most of the time I have to force myself to go to work.
- (9) I am satisfied with my job for the time being.
- (10) I feel that my job is no more interesting than others I could get.
- (11) I definitely dislike my work.
- (12) I feel that I am happier in my work than most other people.
- (13) Most days I am enthusiastic about my work.
- (14) Each day of work seems like it will never end.
- (15) I like my job better than the average worker does.
- (16) My job is pretty uninteresting.
- (17) I find real enjoyment in my work.
- (18) I am disappointed that I ever took this job (p. 309).

There were five responses for each of the 18 questions: "strongly agree, agree, undecided, disagree, and strongly disagree". The five responses were placed immediately beneath each of the 18 questions.

#### *Computation*

The five responses were scored from one to five. Scoring varied with the format of the question. Questions 1, 2, 5, 7, 9, 12, 13, 15, and 17 were scored in the following manner: strongly agree (5), agree (4), undecided (3), disagree (2), strongly disagree (1). The remaining questions were scored in reverse manner: strongly agree (1), agree (2), undecided (3), disagree (4), strongly disagree (5). The scores for the 18 items were summed; the larger the score, the higher the satisfaction. The scores range from 18 (low satisfaction) to 90 (high satisfaction). The mean score for the sample of office employees is 63.8; the standard deviation is 9.4. The adult night school students have a mean score of 70.4 and a standard deviation of 13.2 (pp. 308-10).

#### *Validity*

Two sets of data provide information about validity. First, the adult night-school students are divided into two categories, those employed and not employed in personnel occupations. Since the night-school course was concerned with personnel psychology, it was assumed that the students employed in personnel occupations would be more satisfied with their jobs than the students not so employed. This assumption is confirmed by the data. Second, the adult night-school students also completed a measure of job satisfaction previously developed by Hoppock (1935). The product-moment correlation between scores on the Hoppock measure and the Brayfield and Rothe scale is 0.92 (p. 311)[6].



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*Reliability*

The odd-even coefficient computed for the sample of female office employees is 0.77, corrected by the Spearman-Brown formula to 0.87 (p. 311).

*Comments*

The comments are divided into two parts. First, the handbook has some notes about the original Brayfield and Rothe article. Second, there will be some updating notes based on the measurement review by Cook *et al.* (1981, pp. 16-19).

The handbook has four comments about the original article. First, Brayfield and Rothe's implicit definition of satisfaction seems to correspond quite closely to the handbook's definition of satisfaction. The way the members of the organization feel about their jobs (Brayfield and Rothe) seems to have essentially the same referent as the degree of affective orientation towards the organization (the handbook's definition). "Feel" and "affect" are often used interchangeably in the organizational literature. Second, the computational section indicates that the scoring varies with the format of the question. However, Brayfield and Rothe do not indicate the exact procedure. The scoring for the different questions is relatively easy to determine, but it would have been helpful if Brayfield and Rothe had explicitly indicated the scoring for the reader. Third, the presentation of the means and standard deviations for the scores is helpful. Fourth, the scale appears to have adequate validity and reliability.

Cook and his colleagues note that the original Brayfield and Rothe scale has been used to study a variety of samples: civil service office employees; clerical workers; taxi drivers and nurse's aides; part-time students working for master's degrees; academic and support staff in a school system; nursing, clerical, and support staff in a hospital; and managers[7]. Eleven means are reported in the review by Cook *et al.* The lowest mean is 56.79 and the highest is 76.51; the mean of the means is 64.32. In the original Brayfield and Rothe article, means of 63.80 and 70.40 are reported. Six standard deviations are reported; their range extends from 8.62 to 14.98. The mean of the standard deviations is 10.78. The original Brayfield and Rothe article reports two standard deviations whose mean is 11.30.

A variety of data pertinent to validity and reliability are reviewed by Cook and his colleagues. Most significant for validity is the study of nursing, clerical, and support staff in a hospital where the Brayfield and Rothe scale, as expected, correlates negatively with quitting (-0.21) and thinking of quitting (-0.54). Four reliability coefficients are reported; the mean of the coefficients, which range from 0.78 to 0.99, is 0.89. The comparable coefficient from the original Brayfield and Rothe article is 0.87. The scale appears to have adequate validity and reliability, according to Cook *et al.*[8].

*Source*

Brayfield and Rothe (1951).

**Dunham and Herman (1975)**

*Description*

In 1955, Kunin published a measure of satisfaction which used pictures, the “faces scale”. These pictures were of men; what Dunham and Herman sought to do in their research was to develop a female equivalent of the male faces scale. Dunham and Herman did a development and validation study; the handbook focuses on the validation study. The sample for the validation study consisted of 47 male and 56 female clerical and technical employees of a pharmaceutical manufacturing firm.

*Definition*

Satisfaction is not explicitly defined. However, Dunham and Herman use terms such as “happy” and “feel” in the description of their scale. These terms are commonly equated with satisfaction in the organizational literature.

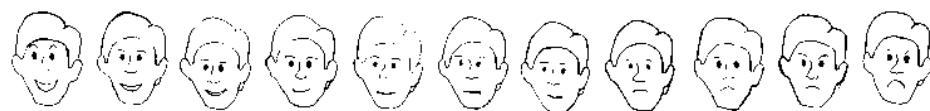
*Data collection*

Each employee was given a 100-point printed scale and a set of either 11 male or 11 female faces. The sequence of faces was different for different employees. Employees were requested to rate all the 11 faces with the printed scale. The employees were to select the face that appeared least happy to them and place it at the bottom of the scale and then select the face that seemed most happy to them and then place it at the top of the scale. The remaining faces were rated following similar instructions. The employees rated both the male and female faces. Finally, all the employees were given an 11-point scale which consisted of all male or all female faces and asked to “circle the face which best describes how you feel about your job in general” (p. 630). Figures 3 and 4 show the male and female faces.

Dunham and Herman also indicate how a seven-point faces scale can be constructed (p. 631). As previously indicated, most of the data pertain to the 11-point scale.

*Computation*

Two types of scoring were used, the 100-point and 11-point scales. The 100-point scale was used to rank all the male and female faces. The least and most happy faces were scored as zero and 100 respectively. Scores between zero and 100 were used for degrees of happiness for the remaining faces. The 11-point scale was a self-rating instrument and was included in the presentation of the faces (Figures 3 and 4). The validity study presents means and standard deviations for each of the 11 faces (p. 630).



**Figure 3.**  
Male faces scale

*Validity*

The male and female scales were correlated with the Hoppock Job Satisfaction scale, a widely used measure of global satisfaction. As expected, the two measures are very highly correlated; the correlation for the total sample is 0.75 (p. 630).

*Reliability*

No data are presented regarding reliability.



**Figure 4.**  
Female faces scale

*Comments*

The development of the female faces study is a welcome addition to the literature. It does not seem appropriate to use male faces to assess the satisfaction of female employees. There are no data which indicate a bias in using a male faces scale to assess satisfaction of male *and* female employees, but it appears as if there may be a bias, and there is no reason to run the risk.

Satisfaction should have been explicitly defined. However, the meaning becomes fairly clear with the use of “happy” and “feel” in the description of the scale. However, there is no substitute for a careful, conceptual discussion of a concept.

There are three ambiguities regarding the instrument. First, the 100-point rating scale is not reproduced, so the reader can only guess at its format. Second, it is not clear how the order of presenting the faces differed for the different respondents; Dunham and Herman merely note that “the order of presentation of faces was counterbalanced” (p. 630). Third, the report indicates that the respondents were given a set of either male or female faces – yet the respondents apparently rated both the male and female faces. It is unclear how both sets of faces should be rated if the respondents only received a single set. These ambiguities could have been resolved by including the instrument in the report of the research. Replication of this research will not be easy. Since space is almost always short on questionnaires, Dunham and Herman thoughtfully indicate how a seven-point faces scale can be constructed (p. 631).

Dunham and Herman believe that the “...male and female versions of the faces scale can be used with male or female employees without biasing the data” (p. 629). The handbook is of the opinion that this belief is premature: more research needs to be done to demonstrate that the instrument has acceptable psychometric properties.

*Source*

Dunham and Herman (1975).

**Quinn and Staines (1979)**

*Description*

This survey is part of a continuing effort to describe, interpret, and monitor the quality of employment in the USA. The survey was conducted by the Survey Research Center of the University of Michigan and was funded by the United States Department of Labor. A representative cross-sectional sample of 1,515 adult workers was used for the analysis[9]. "Adult" is defined as 16 years or older and to be a "worker" means to be currently employed for pay 20 or more hours per week.

*Definition*

Satisfaction is defined as "affective reaction to the job" (p. 205). This definition is intended to refer to what Quinn and Staines label as "facet-free job satisfaction" (p. 205).

*Data collection*

The survey was conducted by interviewers in the homes of the respondents. Questions were read to the respondents, who then indicated their views by selecting the appropriate cards.

The five questions for facet-free job satisfaction were as follows:

- (1) All in all, how satisfied would you say you are with your job – very satisfied, somewhat satisfied, not too satisfied, or not at all satisfied?
- (2) (Phrase in same sex as respondent.) If a good friend of yours told you (he/she) was interested in working in a job like yours for your employer[10], what would you tell (him/her)? Would you strongly recommend this job, would have doubts about recommending it, or would you strongly advise (him/her) against this sort of job?
- (3) Knowing what you know now, if you had to decide all over again whether to take the job you now have, what would you decide? Would you decide without any hesitation to take the same job, would you have some second thoughts, or would you decide definitely not to take the same job?
- (4) If you were free to go into any type of job you wanted, what would your choice be – would want the job you have now, would want to retire and not work at all, would prefer some other job to the job you have now?[11].
- (5) In general, how well would you say that your job measures up to the sort of job you wanted when you took it? Would you say it is very much like, somewhat like, or not very much like the job you wanted when you took it? (pp. 335-6).

Given the interview nature of the survey, the responses were mostly contained in the questions read to the respondents. To permit replication, however, the following are the exact responses presented on cards by the interviewers to the respondents:

- (1) very satisfied, somewhat satisfied, not too satisfied, not satisfied at all;

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- (2) strongly recommend it, have doubts about recommending it, advise (him/her) against it;
  - (3) decide without hesitation to take the same job, have some second thoughts, decide definitely not to take the job;
  - (4) would want the job you have now, would want to retire and not work at all, would prefer some other job to the job you have now;
  - (5) very much like, somewhat like, not very much like (pp. 335-6).

Satisfaction

**477**

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#### *Computation*

The scoring for the responses followed the sequence of the responses. Question (1), for instance, was scored 5, 3, 1, 1 respectively, for “very satisfied, somewhat satisfied, not too satisfied, and not at all satisfied”. A score of five always signified the most satisfaction and one the least. The scale is constructed by summing the scores for the five questions. No weights were used in summing the questions.

The scoring for the five questions is as follows: (1) 5, 3, 1, 1; (2) 5, 3, 1; (3) 5, 3, 1; (4) 5, 1, 1; (5) 5, 3, 1[12]. A mean of 3.66 and a standard deviation of 1.02 are reported (p. 220).

#### *Validity*

No data are presented with which to assess validity.

#### *Reliability*

A Cronbach alpha of 0.77 is presented.

#### *Comments*

As with the Brayfield and Rothe selection, the comments are divided into two parts, one setting forth the handbook’s opinion of the Quinn and Staines measure, and the other an update provided by Cook *et al.*’s measurement review (1981, pp. 28-30).

The handbook has five observations to make regarding the Quinn and Staines measure. First, the use of a national sample is impressive. The development of general measures requires a heterogenous sample, and the sample used by Quinn and Staines certainly meets the requirement. Especially helpful are the comparisons that can be made with the 1969 and 1973 samples, both of which were also national. The items for satisfaction are the same for 1973 and 1977; with some adjustments, the 1969 results can also be compared with the two later surveys. Second, the definition of satisfaction used by Quinn and Staines is the same as the one the handbook proposes. The only difference is that the handbook’s definition is intended to refer to both facet-free and facet-specific satisfaction. Third, the researchers provide no justification for their scoring. Especially puzzling is the scoring for the first and fourth questions, where scores of “1” are used for two responses. Other researchers are constrained to use this scoring if they wish to compare their results to those provided by Quinn and Staines. Fourth, the handbook’s greatest concern is with

the lack of systematic data about validity. This lack of data is puzzling, since researchers at the Survey Research Center are usually very careful in their evaluation of validity. Fifth, the reliability of the scale is adequate.

Cook *et al.*'s measurement review (1981) cites three studies that used some of the Quinn and Staines questions. Occupational compositions in these three studies are not identified. The means and standard deviations of the studies are not comparable to the descriptive statistics provided by Quinn and Staines, owing to differences in the composition of the scales. Two pieces of data are pertinent to validity. The scale in one of the studies correlated, as expected,  $-0.22$  with role ambiguity and  $-0.43$  with work depression. A Spearman-Brown coefficient of  $0.80$  is reported; this compares favourably with the  $0.77$  reported by Quinn and Staines.

The handbook's view is that this is the weakest measure of the six selected for this chapter. A sizeable amount of work has gone into the development of this scale and the handbook believes that, in the long run, it will be found to have adequate psychometric properties. In the meanwhile, researchers who use this scale can compare their results to extensive data from three national surveys. More national surveys will in all likelihood be forthcoming.

*Source*

Quinn and Staines (1979).

**Ironson *et al.* (1989)**

*Description*

The focus of this article was to describe the development of a global job in general scale for satisfaction (JIG) to accompany the job descriptive index (JDI). A second purpose was to explore the relative usefulness of global, facet, and composite measures of satisfaction. The previously described Brayfield and Rothe scale is a measure of global satisfaction, the JDI is a facet measure, and summing the facets of the JDI yields a composite measure. Five samples were used to construct and evaluate the JIG measure: Civil Service workers in Florida ( $N = 1,149$ ), Bowling Green archival samples ( $N = 3,866$ ), Bowling Green archival samples ( $N = 4,490$ ), county employees in Florida ( $N = 227$ ), and nuclear power plant construction employees ( $N = 98$ ). "Bowling Green" refers to the university base for most of the research relative to the JDI.

*Definition*

Satisfaction is not defined but the research was done in the JDI tradition, so it is clear that the traditional JDI definition is being used.

*Data collection*

The job in general scale (JIG) is copyrighted by Bowling Green University and permission was not granted to reproduce the entire scale in the handbook[13]. Permission was granted to reproduce the instructions to the respondents and three questionnaire items. The instructions and items are as follows:

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Think of your job in general. All in all, what is it like most of the time? In the blank beside each word or phrase below, write

- Y for "Yes" if it describes your job  
N for "No" if it does NOT describe it  
? if you cannot decide

*Job in general*

- \_\_\_ Undesirable  
\_\_\_ Better than most  
\_\_\_ Rotten[14].

*Computation*

The scoring for the JIG is the same as the JDI, which will be described later in the chapter. Means and standard deviations are not provided.

*Validity*

Three sets of data are pertinent for validity. A principal-components factor analysis of the 18 items resulted, as anticipated, in a single factor that accounts for 87 per cent of the variance. Convergent validity was established by correlating the JIG scale with four other global scales of satisfaction (p. 196). The resulting correlations range from 0.66 to 0.80. Discriminant validity was established with the nuclear power plant construction employees. It is found, as anticipated, that the facet scales of the JDI correlates more highly with specific measures than with general measures. It is also found, as anticipated, that the JIG scale correlates more highly with general than with specific measures. Finally, the results indicate, again, as anticipated, that the JDI scales correlates more highly with the relevant specific scales. The material for discriminant validity was also used to establish the relative usefulness of global, facet, and composite measures (pp. 196-9).

*Reliability*

Reliability was calculated for the two samples. For the civil service workers in Florida, coefficient alpha is 0.91. Alphas, in the Bowling Green samples with *N*s greater than 100, range from 0.91 to 0.95 (*N* = 3,566).

*Comments*

This new scale fills a major research need. Scholars often feel they need a single satisfaction scale in the research they are doing, and commonly use the work facet of the JDI for this purpose. The work facet scale was not intended for this type of use. Therefore, it is helpful to have the JIG. The JIG also helps to establish the legitimacy of global scales, about which some scholars have doubts[15].

Many organizational scholars are still not sensitive to response-set bias, so it is good to see that the JIG used both positive (ten) and negative items (eight). The positive and negative items are dispersed rather than grouped – another desirable feature of the scale.

The scoring for the scale will be commented on when the JDI is described. It is unfortunate that means and standard deviations are not included in this report on the JIG.

The psychometric properties of the JIG are very impressive. This type of quality is now expected, and regularly delivered, by Smith and her colleagues. Many of these "colleagues" are former students who now occupy important positions in respected universities. The handbook has but one small concern regarding the JIG. Commitment, involvement, and satisfaction are the three major social psychological variables in the handbook. Many researchers use these variables as endogenous determinants in causal models, such as for absenteeism and turnover. There are data which confirm the distinctiveness of these three concepts (Brooke *et al.*, 1988; Mathieu and Farr, 1991), and it would be helpful to subject the JIG to a confirmatory factor analysis with the excellent measures available for commitment and involvement.

*Source*

Ironson *et al.* (1989).

**Weiss *et al.* (1967)**

*Description*

There is both a short form and a long form to measure job satisfaction. The two forms are referred to as the Minnesota Satisfaction Questionnaire (MSQ) and are based on a theory of work adjustment presented in Lofquist and Dawis (1969). The handbook focuses only on the short form. The sample for the short form consisted of individuals from six occupations: assemblers ( $N = 432$ ), clerks ( $N = 227$ ), engineers ( $N = 387$ ), janitors-maintenance men ( $N = 242$ ), machinists ( $N = 240$ ), and salesmen ( $N = 195$ ). All of the 1,723 individuals in the sample lived in the Minneapolis-St Paul area.

*Definition*

Job satisfaction is not defined in the description of the MSQ. It is defined in the related work by Lofquist and Dawis (1969, p.176) as "fulfillment of the requirements of an individual by the work environment". Intrinsic, extrinsic, and general satisfaction are implicitly defined by the instruments of data collection, as will be indicated in discussion of the calculations.

*Data collection*

The form consists of 20 questionnaire items[16]. Preceding the items is the statement, "On my present job, this is how I feel about:". The items are as follows:

- (1) being able to keep busy all the time;
- (2) the chance to work alone on the job;
- (3) the chance to do different things from time to time;
- (4) the chance to be "somebody" in the community;



- (5) the way my boss handles his/her workers;
- (6) the competence of my supervisor in making decisions;
- (7) being able to do things that don't go against my conscience;
- (8) the way my job provides for steady employment;
- (9) the chance to do things for other people;
- (10) the chance to tell people what to do;
- (11) the chance to do something that makes use of my abilities;
- (12) the way company policies are put into practice;
- (13) my pay and the amount of work I do;
- (14) the chances for advancement on this job;
- (15) the freedom to use my own judgement;
- (16) the chance to try my own methods of doing the job;
- (17) the working conditions;
- (18) the way my coworkers get along with each other;
- (19) the praise I get for doing a good job; and
- (20) the feeling of accomplishment I get from the job (p. 111).

Each of the items has five responses: "very dissatisfied, dissatisfied, I can't decide whether I am satisfied or not, satisfied, and very satisfied". The sequence of responses is from "very dissatisfied" to "very satisfied".

#### *Computation*

The scoring is from one to five, with very dissatisfied scored as one and "very satisfied" scored as five. A scale score is obtained by summing the individual items, with no weights attached[17]. Three scales of satisfaction are provided: intrinsic (items 1, 2, 3, 4, 7, 8, 9, 10, 11, 15, 16, 20), extrinsic (items 5, 6, 12, 13, 14, 19), and general (all items). Means and standard deviations are provided respectively (p. 24) for each of the three scales for the 1,723 individuals in the sample: intrinsic satisfaction (47.14 and 7.42), extrinsic satisfaction (19.98 and 4.78), and general satisfaction (74.85 and 11.92)[18].

#### *Validity*

Two sets of data are helpful in assessing validity. First, differences in mean satisfaction scores for individuals in the six occupations studied are statistically significant for each of the three scales. Occupational differences in variability are not statistically significant for any of the scales. "These results", Weiss and his colleagues state, "parallel those obtained for the long-form MSQ and those generally found in studies of job satisfaction" (p. 25). The data thus indicate construct validity. Second, according to the theory of work adjustment (Lofquist and Dawis, 1969), "satisfaction" and "satisfactoriness" are different concepts. Satisfactoriness is defined as "fulfillment of the requirements of the

work environment by the individual" (Lofquist and Dawis, 1969, p. 176). Satisfaction has already been defined. Data thus reflecting this postulated difference between satisfaction and satisfactoriness also support construct validity. Data not included in the source for the MSQ "support the expectation" that satisfaction and satisfactoriness are different concepts (Weiss *et al.*, 1967, p. 26).

*Reliability*

Median Hoyt internal reliability coefficients are reported (p. 24) for each of the scales of satisfaction: intrinsic = 0.80, extrinsic = 0.80, and general = 0.90. Weiss *et al.* believe that the reliability coefficients obtained are "high" (p. 23).

*Comment*

The handbook's comments are divided into two parts. First are its opinions about the instrument and second is an update of research reported in the measurement review by Cook *et al.* (1981, pp. 21-5).

The handbook has six comments about the instrument. First, it is not clear whether or not the explicit definition of satisfaction by Lofquist and Dawis corresponds to the handbook's concept. The use of "feel" in the lead-in statement indicates that the questions may be assessing the handbook's concept of satisfaction, since "feel" and "affect" (the handbook's label) are widely used as interchangeable terms. Second, it is gratifying to observe the link between measurement and theory exhibited by this research. Measurement research is often guided by little theory, a condition that hinders the accumulation of knowledge in the study of organizations. Although theoretical research pertinent to the instrument may be presented elsewhere, this slight inconvenience is a small price to pay for a theoretically based measurement. Third, the MSQ is too long for many research projects, especially those not studying satisfaction as the dependent variable. Fourth, Weiss *et al.* treatment of measurement is very thorough. Not many instruments, as this handbook has illustrated, are supported by the type of data provided here. Fifth, the provision of descriptive statistics is excellent. Especially helpful is the presentation of baseline and demographic data about individuals in each of the six occupations in the sample. Sixth, Weiss *et al.*'s "general" measure is not a global measure, since it is a sum of the facet measures. Their general measure is what Ironson *et al.* (1989) term a "composite" measure.

Cook *et al.* (1981) note that the instrument has been used on a variety of samples: scientists and engineers, police officers, social service counsellors, telephone operators, machinists and technicians, soldiers, clerical employees, civil service workers and retirees, project engineers, and office employees[19]. These samples provide more diversity than the narrow sample that was used to develop the measure.

Descriptive statistics are reported only for general satisfaction[20]. Four means, from 72.10 to 83.22, are cited; the mean of the means is 75.93. The mean for general satisfaction for the original sample of 1,723 is 74.85. Four standard

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deviations, ranging from 6.76 to 13.68, are reported, with the mean of the standard deviations being 10.99. In the original sample, the standard deviation is 11.92.

With respect to validity, the following correlations between intrinsic and extrinsic satisfaction are reported: 0.63, 0.83, 0.64, 0.15, and 0.67. Most of the data for validity, however, pertain to general satisfaction. The following data for general satisfaction are relevant: a correlation of 0.71 with the sum of five measures from the job descriptive index; means of 82.90, 81.00, and 74.00 for, respectively, high, medium, and low perceived participation in goal setting; a correlation of  $-0.25$  with size; a correlation of 0.24 with ratings of morale; and a significant association (no statistics are cited) with perceived equity of pay rules and work pace. Most of these data pertain to construct validity.

For reliability, the following coefficients (mostly alphas) are cited for intrinsic satisfaction: 0.80, 0.81, 0.90, 0.80, and 0.88. Test-retest coefficients of 0.50 and 0.56 are reported. The following coefficients (again mostly alphas) are cited for extrinsic satisfaction: 0.84, 0.78, 0.85, 0.80, and 0.84. For general satisfaction, coefficients (still mostly alphas) of 0.74 and 0.92 are set forth. Test-retest coefficients of 0.63 and 0.59 are indicated.

Cook *et al.* (1981) believe that the scale of general satisfaction is “a sound measure” (p. 24). However, they have some reservations about the scales of intrinsic and extrinsic satisfaction. The handbook agrees with the Cook *et al.* assessment of the measures. Their reservations about intrinsic and extrinsic satisfaction may be bypassed by only using the scale of general satisfaction, a practice followed by many researchers.

#### *Source*

Weiss *et al.* (1967). Both the long and the short form of the MSQ are copyrighted. Permission to use either form can be obtained by writing to the Work Adjustment Project, Industrial Relations Center, University of Minnesota, Minneapolis, Minnesota 55455.

#### **Smith *et al.* (1969)**

##### *Description*

The researchers' purpose was to develop measures of job satisfaction and retirement satisfaction. The handbook focuses only on the measure of job satisfaction, termed the job descriptive index (JDI). Four studies, using a total of 988 subjects, were used to develop the measures. A final study using 2,662 subjects was conducted to obtain average satisfaction scores. These studies are carefully described by Smith *et al.*

##### *Definition*

Job satisfaction is defined as “...the feelings a worker has about his job...” (p. 6)[21]. Five dimensions of job satisfaction are distinguished: work, supervision, pay, promotions, and coworkers.

*Data collection*

The JDI is copyrighted by Bowling Green University and permission was not granted to reproduce the entire scale. Permission, however, was granted to reproduce the following instructions and sample items:

Think of the work you do at present. How well does each of the following words or phrases describe your work? In the blank beside each word below, write:

- Y for "Yes" if it describes your work;
- N for "No" if it does *not* describe it;
- ? if you cannot decide.

*Work on present job*

- \_\_\_ Routine;
- \_\_\_ Satisfying;
- \_\_\_ Good.

Think of the kind of supervision that you get on your job. How well does each of the following words or phrases describe this? In the blank beside each word below, write

- Y for "Yes" if it describes the supervision you get on your job;
- N for "No" if it does *not* describe it;
- ? if you cannot decide.

*Supervision*

- \_\_\_ Impolite
- \_\_\_ Praises good work
- \_\_\_ Doesn't supervise enough

Think of the pay you get now. How well does each of the following words or phrases describe your present pay? In the blank beside each word below, write:

- Y for "Yes" if it describes your pay;
- N for "No" if it does *not* describe it;
- ? if you cannot decide.

*Present pay*

- \_\_\_ Income adequate for normal expenses
- \_\_\_ Insecure
- \_\_\_ Less than I deserve

Think of the majority of people that you work with now or the people you meet in connection with your work. How well does each of the following words or phrases describe these people? In the blank beside each word below, write:

- Y for "Yes" if it describes the people you work with;
- N for "No" if it does *not* describe them;
- ? if you cannot decide.

*Co-workers (people)*

- \_\_\_ Boring
- \_\_\_ Responsible
- \_\_\_ Intelligent

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Think of the opportunities for promotion that you now have. How well does each of the following words or phrases describe them? In the blank beside each word below, write:

Y for "Yes" if it describes your opportunities for promotion;

N for "No" if it does NOT describe them;

? if you cannot decide.

*Opportunities for promotion*

\_\_\_ Dead-end job

\_\_\_ Unfair promotion policy

\_\_\_ Regular promotions

Each of the five scales of the JDI should be presented on a separate page. The JDI has been revised (Roznowski, 1989); the original and revised versions can be obtained from Bowling Green State University, the copyright holder[22].

*Computation*

Agreement (yes) responses to positive items and disagreement (no) responses to negative items receive a score of 3; disagreement (no) responses to positive items and agreement (yes) responses to negative items receive a score of 0. The ? response is assigned a score of 1. The scoring will be discussed again when the comments on the JDI are presented. Smith and her colleagues present means and standard deviations for the JDI for large samples of men and women pooled across all companies studied; these statistics are contained in Table II.

*Validity*

Smith and her colleagues assessed convergent and discriminant validity extensively by means of a multitrait-multimethod matrix. The results show consistent convergent and discriminant validity. Validity will be discussed again in the comments where the careful review of the JDI by Kinicki *et al.* (undated) is summarized[23].

*Reliability*

Table III presents a series of split-half correlation coefficients for the JDI. The mean of the five coefficients is 0.85.

*Comments*

The JDI illustrates the way that measurement research should be done in the study of organizations. Ten years were devoted to the development and evaluation of the scale. As was previously indicated, the scale has been revised and, as will be discussed, the original scoring confirmed. No other scale in the handbook has been subjected to the quality effort expended on the JDI by Smith *et al.*

"The feelings a worker has..." about his/her job – Smith and her colleagues' definition of job satisfaction – is very similar to the handbook's "positive affective orientation towards employment by the organization". "Feelings" and

“affect” are often used interchangeably by organizational researchers. The handbook never proposed a typology of dimensions for satisfaction. Smith *et al.*'s typology is widely cited in the literature.

Two comments are relevant about the questionnaire items used to collect data. First, as has been indicated, the original JDI has been revised by Roznowski (1989). Roznowski did the revision in such a way that it is basically equivalent to the original JDI. Testing corporations, such as the Educational Testing Service and American College Testing, regularly revise their instruments, but such revisions are rare in organizational measurement and the effort is to be commended. Second, the length of the JDI will pose a problem for many researchers. Smith *et al.* recommend five pages – one page for each dimension – for the JDI. If a researcher also wants to use a general measure, such as the job in general measure (JIG), this will require another page, since Smith *et al.* recommend that the five facets are *not* combined for a general measure. The length of the JDI may persuade some researchers, especially those estimating complicated causal models, to use global measures of satisfaction, such as the JIG measure or the Brayfield and Rothe scale.

Hanish's (1992) evaluation of the JDI scoring system, using polychotomous item response theory, led her to conclude that “the overall scoring procedure is still justified today” (p. 382). This evaluation is especially welcomed, because the JDI's scoring system has not been examined since the original research by Smith *et al.* Not only has the JDI been revised but even its scoring has been

**Table II.**  
Means and standard  
deviations for male and  
female employees pooled  
across 21 plants

Scale	N	Males		N	Females	
		Mean	Standard deviation		Mean	Standard deviation
Work	1971	36.57	10.54	638	35.74	9.88
Pay	1966	29.90	14.53	635	27.90	13.65
Promotions	1945	32.06	15.77	634	17.77	13.38
Supervision	1951	41.10	10.58	636	43.13	10.05
Coworkers	1928	43.49	10.22	636	42.09	10.51

**Table III.**  
Split-half correlation  
coefficients

Scale	Correlation of random split halves	Correlations corrected to full length by Spearman-Brown formula
Work	0.73	0.84
Pay	0.67	0.80
Promotions	0.75	0.86
Supervision	0.77	0.87
Coworkers	0.78	0.88

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evaluated! This type of continuity in organizational measurement research is unique and sets a high standard for other scholars to follow.

The JDI's scoring is quite complicated. Use of a scoring key will somewhat reduce the complexity of scoring, but with large surveys, it will be a bit of a problem. Many researchers will prefer to use the Brayfield and Rothe scale, since its scoring can be totally managed by the computer.

Kinicki *et al.* have done a study of the construct validity of the JDI. Most of Kinicki *et al.*'s study reports the results of a meta-analysis (pp. 8-25); these results will constitute the largest share of the handbook's comments on validity.

Five major organizational journals were examined from 1975 to October 1995 to locate empirical studies of satisfaction using the JDI; 143 appropriate studies, containing 254 samples, were located for the meta-analysis. The idea was to see if the findings in these 143 studies concerning the determinants, correlates, and consequences of satisfaction were consistent with explanations proposed by Smith *et al.* and other major explanations in the field. Overall, the results from the meta-analysis were consistent with predictions from Smith *et al.* and from other major explanations in the field, thus supporting the construct validity of the JDI.

One additional comment about validity is germane. Researchers who estimate causal models should check to make sure that their determinants are not included in the dimensions of satisfaction measured by the JDI. To illustrate: if a researcher believes that promotional opportunity increases commitment by improving satisfaction, then he/she will experience measurement contamination, because the independent variable (promotional opportunity) will be measured by items very similar to the intervening, endogenous variable (satisfaction). The wide range of the JDI measures increases the possibility of measurement contamination. A way to avoid this problem is to use a global measure of satisfaction.

Kinicki *et al.* also present some data about reliability (pp. 25-9). When the JDI is compared to the Minnesota Satisfaction Questionnaire (MSQ) and the Index of Organizational Reactions (IOR)[24], the results indicate "...that the JDI has very good levels of internal consistency..." (p. 28). The mean test-retest coefficients also confirm the reliability of the JDI. Kinicki *et al.* view reliability of measurement as a necessary but not sufficient condition for construct validity – thus the discussion of reliability in a paper dealing with the construct validity of the JDI.

The psychometric properties of the JDI are excellent. Although there are some practical problems with its use, such as its long length and complicated scoring, it is probably the best facet measure of satisfaction in the literature. The JDI is clearly the instrument of choice for a facet measure of satisfaction.

*Source*

Smith *et al.* (1969). The copyright for the Job Descriptive Index is owned by Bowling Green State University. The complete forms, scoring key, instructions, and statistical averages can be obtained from Dr Patricia C. Smith, Department

of Psychology, Bowling Green State University, Bowling Green, Ohio 43403. Also relevant is Kinicki *et al.* (undated).

**Notes**

1. This definition is based on Vroom (1964, pp. 99-105). Also very helpful is the comprehensive review by Locke (1976).
2. These particular dimensions come from the research by Smith and her colleagues (1969, p. 83).
3. The view towards the "Herzberg controversy" expressed in the 1972 edition of this handbook (Price, 1972b, pp. 156-7) still seems to be correct. See, for example, Lawler (1973, p. 70). The controversy does not warrant a discussion here.
4. The morale label comes from the Western Electric Research (Landsberger, 1958). Watson and Clark, whose work is discussed in the chapter on positive and negative affectivity, have material about positive and negative affect. Material about mood is found in Burke *et al.* (1989). Warr uses the "well-being" label in his research (1990 and Sevastos *et al.*, 1992). Positive affectivity and negative affectivity seem to be different from satisfaction (Agho *et al.*, 1992).
5. The original 18 items contain a trial item and the additional directive to "work out the sample item numbered (0)" (p. 309). Because the trial item is not a necessary part of the instrument, it has been omitted.
6. Brayfield and Rothe also suggest that their scale has face validity; they note a high degree of consistency among the judges used to construct the scale (p. 310).
7. These comments ignore the studies that use modified versions of the Brayfield and Rothe measure. It was not possible to identify some of the occupational groups in the studies reviewed by Cook *et al.*
8. Price and his colleagues have used a shortened version of the Brayfield and Rothe scale for many years, with excellent psychometric results, in their research on absenteeism and turnover. Citations for some of this literature are found in the Price and Mueller selection for routinization.
9. Also included in the survey were 1,086 respondents from a 1973 survey. The focus in this selection is on the 1,515 respondents of the 1977 survey.
10. The "for your employer" was omitted for self-employed respondents. Information about this omission comes from the text (pp. 210-11) rather than from the interview schedule.
11. There is an inconsistency between the text and the interview schedule concerning the fourth question. The text clearly includes the fourth question as the handbook has reproduced it (pp. 210-11). Quite a different fourth question, however, is included in the interview schedule (p. 335). The handbook cannot even find the fourth question of the text in the interview schedule. The handbook follows the text for the fourth question, because the discussion is so clear concerning the composition of the scale. Cook and his colleagues (1981) also follow the text rather than the interview schedule as reproduced.
12. There is a scoring inconsistency between the text and interview schedule concerning the first question. The handbook follows the text, as do Cook *et al.* (1981), for the same reason that the text version was used for the fourth question.
13. The complete forms, scoring key, instructions, and averages can be obtained from Dr Patricia C. Smith, Department of Psychology, Bowling Green State University, Bowling Green, OH 43403.
14. The researcher who wishes to see the 18 items in the JIG can find them in the article (p. 195). It must be emphasized, however, that permission must be granted to use the 18 items for research. The scale is copyrighted.
15. The reference here is to the work of Breugh, discussed in the chapter on power.



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16. There is also another page of instructions preceding the 20 questionnaire items, and following the instructions the five responses are defined. If the copyright restrictions require inclusion of the instructions and definitions, then the short form will probably be too long for most research projects studying satisfaction.
  17. Weiss and his colleagues recommend that the raw scores be converted into per centiles, and provide tables for the conversion. Most researchers, however, use the raw scores. The review by Cook *et al.* (1981) does not even mention the use of per centile scores.
  18. Descriptive statistics are also provided for individuals in each of the samples' six occupations.
  19. Some of the occupations in the samples cited by Cook *et al.* are not identified.
  20. Means and standard deviations of 3.66, 0.96 and 2.89, 0.93 are provided for intrinsic and extrinsic satisfaction respectively (p. 24). These statistics must be errors, since the manual cites much larger means (47.14 and 19.98) and standard deviations (7.42 and 4.78) for intrinsic and extrinsic satisfaction.
  21. Smith and her colleagues also use the term "affect" (p. 87).
  22. The researcher who wishes to examine the original and revised items of the JDI can find them in Roznowski's 1989 article. To repeat a point previously made: permission must be obtained from Bowling Green State University to use the copyrighted scale in research.
  23. This unpublished study will be described when the source for Smith *et al.* is indicated.
  24. The IOR is discussed in Cook (1981, pp. 39-45).

## 24. Size

### Definition

Size is an organization's scale of operations[1]. Although number of personnel, of one variety or another, is the most widely used indicator, other common indicators of size are number of beds (for hospitals), number of students (for schools), sales volume (for businesses), and assets[2]. The handbook assumes that the different indicators are highly correlated.

A different view comes from Kimberly (1976), who argues that size is a multidimensional concept consisting of four aspects: physical capacity (number of beds is an illustration), personnel available (number of employees, for example), inputs or outputs (sales volume), and discretionary resources (assets). In Kimberly's view, these four aspects of size are not necessarily highly correlated. Although there are data supporting both the handbook's view (Agarwal, 1979a; 1979b; Child, 1973) and Kimberly's view (Gupta, 1980; Martin, 1979), the existing data do not convincingly support either, suggesting the need for more research. The handbook views Kimberly's four "aspects" as different ways to define size. Kimberly has no general definition that includes the four aspects; scale of operations is intended to be such a general definition.

### Measurement

Size is generally measured by data taken from organizational records. The first selection, by Blau and Schoenherr (1971), illustrates this general measurement strategy. However, size can also be measured by interviews and questionnaires. The second selection, by Kalleberg *et al.*, illustrates the use of interview data to measure size. These two selections embody the handbook's concern to encourage the use of multiple means of data collection. The long-term future of organizational theory must be based on the use of different methods of collecting data; exclusive reliance on a single procedure, such as questionnaires, is unwise.

Discussion of size raises the issue of how to distinguish the organization from its environment – how, in other words, to distinguish members of the organization from non-members. This issue is especially critical with personnel, the most common indicator of size, since there are various types of personnel and it is not always clear whether or not they are members of the organization. In Chapter 10, on the environment, the handbook indicated that individuals who are legitimately subject to organizational norms are considered to be members of an organization. With this criterion, employees, students, patients, and physicians are viewed as members of their respective organizations, whereas customers and members of governing boards are not considered to be members. Even though most discussions of size do not explicitly treat the issue of defining an organization's boundaries, the issue is important and should be treated explicitly.

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**Blau and Schoenherr (1971)**

Size

*Description*

The site for this study was state employment security agencies in the USA. These agencies are responsible for the payment of unemployment insurance benefits and the provision of public employment services; 53 state agencies, with 1,201 local offices and 387 major functional divisions located in the central headquarters, were examined. A number of organizational variables were investigated by Blau and Schoenherr; the handbook focuses on size.

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**491***Definition*

Size is defined as “the scope of an organization’s responsibilities” (p. 55). “Volume” is sometimes used by Blau and Schoenherr as a synonym for “scope”.

*Data collection*

The number of full-time personnel was used as the indicator of an organization’s scope of responsibility (p. 374). Information about the number of full-time personnel was obtained from “the payroll print-out or some official current listing of personnel such as an employee register, manning tables, or staffing patterns” (p. 381). Since the number of personnel fluctuates, the listing was obtained for a specific date, the first quarter of 1966 in this study.

*Computation*

As just indicated, the number of full-time personnel was used as the indicator of size. If the correlation of a variable with size was increased by 0.10 or more when size was logarithmically transformed, then this transformed version was used (p. 176). The mean and standard deviation for the untransformed measure for the 53 agencies are 1,195 and 1,166 respectively (p. 374).

*Validity*

Construct validity is supported, since the results indicate that increases in size produce, at a declining rate, more complexity (pp. 55-81). A highly complex organization is characterized by many occupational roles, subunits, levels of authority, and operating sites. Blau and Schoenherr use “complexity” and “differentiation” interchangeably.

*Reliability*

No information about reliability is presented.

*Comments*

Although they use different terms, Blau and Shoenherr’s view regarding size is identical to the handbook’s. There is both a general definition (scope of an organization’s responsibilities) and a specific indicator (number of full-time personnel).

Two points are pertinent about using the number of full-time personnel to indicate size. First, no rationale is offered for excluding part-time employees

from the calculations. This exclusion seems unwise if practised generally, since some organizations, such as hospitals, often employ sizeable numbers of part-time employees. Two part-time employees could, for example, have been equated with one full-time employee (Van de Van and Ferry, 1980, p. 116). This equation is crude, since part-time employees work varying amounts of time. Second, Blau and Schoenherr are properly flexible in their use of logarithmic transformations. The transformations are sometimes justified, since size is often related in a non-linear manner to the variables being examined. If non-linearity is not a problem, and Blau and Schoenherr's 0.10 criterion is one way to assess this, then there is no reason to perform the transformation.

The lack of an explicit concern with validity and reliability is a weakness of this research. However, when this study was done these issues were not as salient as they are now. Despite this weakness, this research is a landmark in the development of organizational theory.

*Source*

Blau and Schoenherr (1971).

**Kalleberg *et al.* (1996)**

*Description*

As previously indicated, this selection focuses on data about size from the National Organizations Study (NOS). Previous chapters have used other data from the NOS.

*Definition*

The NOS does not explicitly define size.

*Data collection*

The NOS has three sets of data pertinent to the measurement of size: the number of full-time employees, the number of part-time employees, and the approximate total annual operating budget (p. 49). In the chapter on administrative intensity, the NOS's interview items were described for collecting data about full-time and part-time employees. The following interview item was used to collect data about the operating budget: "Approximately what is (Org's) total operating budget for this fiscal year? (if 'don't know', ask for R's best estimate)" [3]. (These are question numbers 90a and 90b on the telephone-interview schedule.) "R's", of course, refers to respondents. Most of the analyses in the NOS uses the number of employees as the measure of size.

*Computation*

At the time of this study, the typical US employee works in an establishment with 599 full-time employees and 72 part-time employees; both figures are unweighted means (p. 49). The standard deviations, also unweighted, are 2,395 and 406 for full-time and part-time employees respectively (p. 49)[4]. The mean

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annual operating budget is \$75 million (p. 49). Since the number of personnel – the measure of size most often used by the NOS – has a positive skew, the skew is usually reduced by using a natural log transformation of size in analyses of the data.

Size

*Validity*

The major results from the NOS (pp. 326-9) indicate 14 expected findings regarding size.

**493**

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- (1-3) Larger organizations are more complex, decentralized, formalized, and lower in administrative intensity than smaller organizations.
- (4-5) Firm internal labour markets and official dispute resolution procedures are more likely to be found in larger than in smaller organizations.
- (6-9) Large and small organizations recruit and select employees in different ways. Larger organizations expend more resources on hiring; professional referrals and newspaper advertisements are more likely to be used to identify high-prestige employees in larger organizations, highly female jobs are more often filled with persons recruited by means of advertisements and unsolicited approaches; and selection efforts are usually less intense for highly female jobs in large organizations.
- (10) Official, job-training programmes are more likely to be provided by large organizations than by small ones. This size difference, however, exists mainly because larger organizations are more formalized and more likely to have a firm internal labour market.
- (11) Employees of larger organizations earn more.
- (12) There is more earnings inequality in larger organizations.
- (13-14) Finally, the combination of both personal and familial benefits is most likely to be provided by larger organizations that are the branches of other organizations and operate in complex, competitive, and institutionalized environments[5].

The number of expected findings indicates the importance of size in the NOS.

*Reliability*

No data are provided regarding reliability.

*Comments*

The measures of size used by the NOS are compatible with the handbook's definition of size. An organization's scale of operations is often assessed by the number of employees, the NOS's most frequently used measure of size. Although it is typical in organizational research to present measures rather than a definition of size, a definition should have been provided.

The NOS left it to the respondents to define the meaning of "employee". It is likely that the respondents defined employee as an individual paid by the organization and, therefore, listed on a payroll printout. However, many individuals paid by the organization are not employees. Members of governing boards, for example, receive some money from the organization but are typically not viewed as employees. This is not a major issue, but more attention should have been devoted to the definition of employee. This definition requires an explicit view of what constitutes the organization's boundary.

Although no data are provided about reliability, the measure of size is psychometrically acceptable. The measurement of size does not permit the use of coefficient alpha, the most common definition of size in the organizational literature. As previously indicated, the use of test-retest measures is not really feasible in the NOS type of study. It is commendable to see size used so extensively in the NOS study and to see its results so compatible with the larger organizational literature.

*Source*

Kalleberg *et al.* (1996).

**Notes**

1. The term "scale of operations" is frequently used in discussions of size by organizational researchers who are economists. See, for example, Melman (1956).
2. See Price (1972b, pp. 174-9) for references regarding size.
3. This item comes from the telephone-interview schedule. After the question about total operating budget, the interviewer was requested to indicate how confident he/she believed the respondent was in making the requested estimate. Three levels of confidence are provided on this schedule: "very confident, somewhat confident, and not very confident".
4. Unweighted and weighted scores in the NOS were discussed in Chapter 3 on administrative intensity.
5. These results are stated as correlations. The NOS, however, views the results as propositions, that is, as causal statements.

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## 25. Social support

Social support

### Definition

Social support refers to helping relationships regarding work-related matters[1]. This help can come from co-workers, the immediate supervisor, friends outside of work, and “partners”. Spouses are the most common partners. Helping relationships have been referred to in different ways in the organizational literature. In the 1940s and 1950s, these relationships were commonly labelled “primary groups” (Shils, 1950; Shils and Janowitz, 1948). Beginning in the 1950s, scholars at the Survey Research Center (University of Michigan) referred to these relationships as “cohesion” (Libo, 1953; Seashore, 1954). The 1986 version of this handbook, for instance, termed these relationships “cohesive work groups” (pp. 250-3). Contemporary discussions of networks (Ibarra, 1995) contain material pertinent to social support. Although they never referred to primary groups or cohesive work groups, the Western Electric researchers were interested in the behaviour to which these terms refer (Landsberger, 1958; Roethlisberger and Dickson, 1939). The social support terminology has been used extensively by researchers at the Survey Research Center (House, 1980; 1981) and is the source of the handbook’s use of these labels.

495

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There is currently considerable interest in “trust” in organizations (Kramer and Tyler, 1996). The literature about trust seems to be tapping, at least to some extent, the same type of helping relationships referred to by social support. Cummings and Bromiley (1996) have, for example, developed an organizational trust inventory (OTI) to measure trust[2]. The short form of the OTI has questionnaire items which refer to telling the truth in negotiations, meeting negotiated obligations, being reliable, stepping on other people, trying to get the upper hand, taking advantage of problems, negotiating honestly, keeping your word, misleading others, trying to get out of commitments, negotiating joint expectations fairly, and taking advantage of vulnerable people. A high score on Cummings and Bromiley and Cummings’ short form would seem to indicate a high degree of social support. Trust and social support are not identical concepts, but they seem to be referring to closely related behaviour[3].

### Measurement

Kim’s (1996) study of South Korean automobile employees’ intent to stay was used as the selection for general training in Chapter 12. Its data on social support will now be used, because they are the best that the handbook can find on this topic. Dissertations, such as Kim’s, are not the ideal source for the handbook, because they are difficult to obtain. However, when a dissertation has critical data not elsewhere available, it will be used.

**Kim (1996)**

*Description*

As previously indicated, Kim's research was used in the chapter on general training, and the descriptive information need not be repeated here. This chapter's focus is Kim's data about social support.

**496**

*Definition*

Social support is defined as "work-related assistance" (p. 45). As will soon be indicated, this assistance comes from different sources. These different sources represent different dimensions of social support.

*Data collection*

The data to measure social support come from a section on the questionnaire entitled "support in work". Respondents were given the following instructions: "Please indicate your agreement or disagreement with each of the following statements about support in your work". Four sources of support were assessed: "support from your spouse, support from your immediate supervisor, support from your co-workers, and support from your friends". A check mark was provided if the respondent had no spouse. Immediate supervision is defined as "...the person who most often officially assesses your job performance". Co-workers are defined as "...the people with whom you have the most contact in the company. Do not consider your immediate supervisor as a co-worker". Friends are defined as "...peers outside of work".

The following four questionnaire items were used to collect data for the spouse:

- (1) My spouse is *not* willing to listen to job-related problems (R).
- (2) My spouse does *not* show a lot of concern for me on my job (R).
- (3) My spouse can be relied on when things get tough on my job.
- (4) My spouse is helpful to me in getting my job done.

The following four items were used to collect data about the immediate supervisor:

- (1) My immediate supervisor is willing to listen to my job-related problems.
- (2) My immediate supervisor shows a lot of concern for me on my job.
- (3) My immediate supervisor can *not* be relied on when things get tough on my job (R).
- (4) My immediate supervisor does *not* care about my well being (R).

Two items were used for co-workers: "I am very friendly with one or more of my co-workers"; and "I regularly do things outside of work with one or more of my co-workers".

Two items were used for friends outside of work: "I can talk to my close friends about my problems at work"; and "My close friends are willing to listen to my job-related problems" (pp. 276-7).



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Five responses were provided for each of the questionnaire items: “strongly agree, agree, neither agree nor disagree, disagree, and strongly disagree”.

Social support

#### *Computation*

The scores for the responses range from five (strongly agree) to one (strongly disagree) for the positive items. For the negative items, the scores are reversed. The means and standard deviations, respectively, for the four sources of support are as follows: spouse (2.17 and 1.82), immediate supervisor (3.53 and 0.86), co-workers (3.81 and 0.83), and friends (3.69 and 0.93).

**497**

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#### *Validity*

Two sets of data are relevant for validity. First, the four social support variables were factor analysed with the 17 other exogenous determinants. Factor loadings for the support variables are as follows: spouse (0.92, 0.93, 0.90, 0.91), immediate supervisor (0.83, 0.85, 0.68, 0.64), co-workers (0.71, 0.68), and friends (0.73, 0.82)[4]. Kim interprets this information as providing support for the discriminant and convergent validity of the measures. Second, the four support variables were hypothesized to increase satisfaction and organizational commitment, thereby indirectly increasing intent to stay, the dependent variable. The results of a LISREL analysis indicate that, as expected, supervisory support increases satisfaction and that spouse support increases commitment. However, friends' support unexpectedly decreases satisfaction. Supervisory and spouse support have the expected significant positive impact on intent to stay; however, friends' support unexpectedly decreases intent to stay.

#### *Reliability*

Coefficient alphas for the four sources of support are: spouse (0.95), immediate supervisor (0.84), co-workers (0.64), and friends (0.75).

#### *Comments*

Kim's view of social support as “work-related assistance” is very close to the handbook's “helping relationship”. His data are thus relevant to the concern of this chapter.

Three comments are pertinent to Kim's questionnaire items. First, “spouse” was used because living together outside of marriage is not very common in South Korea. Use of these items in the USA might substitute “partner” for “spouse”, but inform the respondents that most partners are spouses. Second, the definitions offered for immediate supervisors, co-workers, and friends outside of work are helpful, since they gently nudge the respondents to answer these questions in the way the researcher intends. Third, sensitivity to response-set bias was illustrated for the spouse and immediate supervisor, because the four items were evenly split between positive and negative statements. Two negative items were eliminated from co-workers and from friends because of low loadings.

The results of the factor analysis provide stronger evidence for validity than the prediction based on the causal model. Results from the factor analysis are impressive, since this type of data with a large set of exogenous variables is rare in organizational analysis. The results might have come out as predicted had it been possible to use four items for co-workers and friends outside of work.

The reliability results are very acceptable for spouse and immediate supervisor, acceptable for friends outside of work, and a bit low for co-workers. All in all, the reliability results are acceptable.

*Source*

Kim (1996).

**Notes**

1. This definition is based on Ganster *et al.* (1986). The work of Ganster *et al.* is based on research conducted at the Survey Research Center (University of Michigan).
2. The Organizational Trust Inventory is copyrighted.
3. It is, of course, an empirical question whether or not social support and trust are distinctive concepts. The handbook's measure of social support and the OTI can be used in a research project and the data subjected to a confirmatory factor analysis.
4. This information comes from pp. 248-50.

### Definition

Stress exists when an employee is unable to fulfill the demands of his/her job[1]. The literature traditionally cites four dimensions of stress: lack of clarity about the demands (role ambiguity), incompatibility in the demands (role conflict), amount of work required by the demands (role overload), and resources available to fulfill the demands (resource inadequacy). The 1986 version of this handbook treated role ambiguity in the discussion of communication (Chapter 7) and role overload in the analysis of work load (Chapter 31), but did not include role conflict and resource inadequacy. These four dimensions of stress are often termed “stressors”[2].

The handbook proposes two additional dimensions of stress, hazards and insecurity. An employee may be unable to fulfill job demands because the work is dangerous. Visconti’s research (1979) has emphasized the importance of hazardous work; however, he does not view this type of work as a dimension of stress. An employee also may be unable to fulfill job demands because continued employment in the job is unlikely. Oldham *et al.*’s research (1986) has focused on the importance of job insecurity; however, like Visconti, they do not view insecure work as a dimension of stress.

### Measurement

The research by Kim *et al.*, the first selection, investigates five dimensions of stress (ambiguity, conflict, overload, resource inadequacy, and hazards) in their explanation of intent to stay. Kim *et al.* mostly take a global approach to the ambiguity dimension of stress. Breugh and Colihan (1994), the second selection, break ambiguity into different facets and thus provide an alternative to one of the measures used by Kim *et al.* This is the same Breugh whose measurement research was discussed in Chapter 20 dealing with power. Finally, Deery *et al.* (1994), the third selection, focus on job security.

### Kim *et al.* (1996)

#### *Description*

The basic descriptive information about this research was provided in the chapter on justice. As just indicated, the research by Kim and his colleagues will now be used for its data about stress.

#### *Definition*

Stress is defined as the “extent to which job duties cannot be fulfilled” (p. 951). Four dimensions of stress are indicated: ambiguity (unclear job obligations), conflict (inconsistent job obligations), workload (the amount of effort required by a job), and resource inadequacy (lack of means to perform the job (p. 951). Hazards are defined as the extent to which employment is physically dangerous, (p. 951) but are not viewed as a dimension of stress.

*Data collection*

As indicated in the chapter on justice, Kim *et al.* collected their data by questionnaire. The respondent was instructed to indicate his/her agreement or disagreement with a series of 106 questionnaire items; the items referring to stress were distributed among these 106 items.

Two items were used to collect data about ambiguity:

- (1) I do not know what my responsibilities are in performing my job.
- (2) I know exactly what is expected of me in my job[3].

(The two items are question numbers 42 and 52 on the Kim *et al.* questionnaire.)

Conflict was also assessed by two items:

- (1) I get conflicting job requests from different supervisors.
- (2) I get conflicting job requests from my immediate supervisor.

(Question numbers 65 and 85.)

Three items were used to collect information about workload:

- (1) I do not have enough time to get everything done on my job.
- (2) My workload is too heavy for my job.
- (3) I have to work very fast on my job[4].

(Question numbers 5, 13, and 62.)

Resource inadequacy was gauged by four items:

- (1) I don't have enough room to do my job.
- (2) I have adequate equipment to do my job.
- (3) I have enough support service to do my job.
- (4) I have difficulty getting supplies I need on my job.

(Question numbers 23, 38, 39, and 43.)

Three items were used to obtain data to measure hazards:

- (1) My job rarely exposes me to physical dangers.
- (2) My job often exposes me to unhealthy conditions.
- (3) Serious accidents often occur in the job I do.

(Question numbers 7, 61, and 70.)

Five responses were provided for each of the questionnaire items: "strongly agree, agree, neither agree nor disagree, disagree, and strongly disagree".

*Computation*

The scores range from five to one, with "strongly agree" scored as five. To obtain the total score for a scale, the item scores were summed and divided by the number of items in the scale. The higher the scores, the greater the stress. The means and standard deviations, respectively, for the different dimensions of stress are as follows: ambiguity (1.93 and 0.57); conflict (2.48 and 0.84), workload (3.59 and 0.81), resource inadequacy (2.72 and 0.83), and hazards (2.58 and 0.88).

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*Validity*

Two sets of data are relevant for validity. First, the 22 exogenous variables in the causal model used by Kim *et al.* to explain intent to stay were factor analysed. A few questionnaire items had to be dropped because of low loadings. However, the items previously cited for the five dimensions of stress only loaded with the intended dimensions. This information is interpreted by Kim *et al.* as indicating satisfactory discriminant and convergent validity (p. 959). Second, the five dimensions of stress were hypothesized to impact negatively on satisfaction and commitment, thereby indirectly influencing intent to stay in a negative manner. One of the relationships came out as predicted: conflict negatively influences commitment in a significant manner. None of the five stress variables had total effects on intent to stay greater than 0.10; the highest total effects exists for conflict (-0.08).

*Reliability*

Coefficient alphas for the five dimensions of stress are as follows: ambiguity (0.51), conflict (0.80), workload (0.73), resource inadequacy (0.70), and hazards (0.74).

*Comments*

Allowing for some slight differences in terminology, Kim *et al.*'s definition of stress and its dimensions correspond very closely to the handbook's formulations. As previously indicated, Kim *et al.* did not view hazards as a dimension of stress.

Two comments are in order about Kim *et al.*'s questionnaire items. First, they are aware of response-set bias, but do not deal with it consistently. Ambiguity has one positive and one negative item, conflict has two negative items, workload has three negative items, resource inadequacy has two positive and two negative items, and hazards has two positive and one negative item. It is usually recommended that the positive and negative items on a scale be roughly equal in number. Second, since the immediate supervisor is not always clear in organizations, the respondent should have been given assistance in determining who this person was.

The results for validity are mixed. Especially strong results are provided by the factor analysis. It is rare to find this type of data confirming discriminant and convergent validity. The predictions, however, are not very impressive, since few of them came out as anticipated. It is difficult to believe that there is little variation in stress in the hospital studied. The physicians in the sample worked throughout the hospital where the amount of stress is likely to differ. It may be that the small sample ( $N = 244$ ) partially accounted for the lack of significant results.

The results for reliability are generally quite acceptable. Only the alpha for ambiguity falls below 0.70. Given the small number of items used by the scales, these results are impressive.

These measures certainly merit future research. More impressive results can perhaps be obtained with slightly longer scales used to study a large and varied sample of employees.

*Source*  
Kim *et al.* (1996).

**Breaugh and Colihan (1994)**

*Description*

The purpose of the research reported in the article was to develop a facet measure of "job ambiguity". Four studies were conducted to develop the scale. The first study was a cross-section of employees in the production department of a large midwestern organization ( $N = 100$ ). The second study consisted of 343 participants who worked for a *Fortune* 500 company. The third study was an experiment which used 52 undergraduates who participated in the study for course credit. Study four collected data from 167 students enrolled in an evening master of business administration programme. All the students were full-time employees.

*Definition*

Job ambiguity is defined as "...employees' perceptions of uncertainty concerning various aspects of their jobs" (p. 191). Three dimensions, or facets, of job ambiguity are distinguished. Performance criteria ambiguity refers to "...employee uncertainty concerning the standards that are used for determining whether one's job performance is satisfactory" (p. 192). Work method ambiguity is "...employee uncertainty with regard to the ... procedures they should use to accomplish their work" (p. 192). Scheduling ambiguity is defined as "...employee uncertainty concerning the ...sequencing of work activities" (p. 193). The three dimensions of job ambiguity were obtained from a review of the literature.

*Data collection*

Three questionnaire items were used to collect data about performance criteria ambiguity:

- (1) I know what my supervisor considers satisfactory work performance.
- (2) It is clear to me what is considered acceptable performance by my supervisor.
- (3) I know what level of performance is considered acceptable by my supervisor" (p. 202).

Three items were used for work method ambiguity:

- (1) I am certain how to go about getting my job done (the methods to use).
- (2) I know what is the best way (approach) to go about getting my work done.
- (3) I know how to get my work done" (p. 202).

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Finally, three items were used to collect data to measure scheduling ambiguity:

Stress

- (1) I know when I should be doing a particular aspect (part) of my job.
- (2) I am certain about the sequencing of my work activities (when to do what).
- (3) My job is such that I know when I should be doing a given work activity” (p. 202).

503

Subjects responded to the previous questionnaire items on a seven-point continuum: “disagree strongly, disagree, disagree slightly, neutral, agree slightly, agree, and agree strongly” (p. 202).

#### *Computation*

The scoring ranges from one for “disagree strongly” to seven for “agree strongly”. To construct a score for a dimension, the three scores were summed and divided by three. The higher the score, the lower the job ambiguity. The average means and standard deviations for the first and second study for the three dimensions are as follows: performance criteria ambiguity (5.43 and 1.13), method ambiguity (5.84 and 1.02), and scheduling criteria (5.42 and 1.18).

#### *Validity*

Three sets of data are pertinent for validity. First, three confirmatory factor analyses –reported in studies one, two, and four –strongly confirm the hypothesized three dimensions. All of the job ambiguity items load significantly on the appropriate factors, the fit indices confirmed the three dimensions, and the three-factor model fit the data better than a one-factor global ambiguity model[5]. Second, the three job ambiguity scales correlate with hypothesized relationships, such as with satisfaction with work. Third, self-reports of the three facets are shown to be sensitive to experimental manipulation of the different facets. For instance, the individuals in the low performance criteria ambiguity condition report having less criteria ambiguity than did those in the high performance criteria condition. Breugh and Colihan believe that their measures possess satisfactory validity.

#### *Reliability*

There is information about reliability from two types of data. First, the coefficient alphas reported for studies one, two, and four are quite high, with an average of 0.91. Second, the test-retest reliability (median = 0.69) compares very favourably with a similar coefficient (0.41) from the widely used Rizzo *et al.* measure (1970). Breugh and Colihan believe that their measures possess satisfactory reliability.

#### *Comments*

This study is comparable in quality to Breugh’s previous cited study on job autonomy in the chapter on power. The field of organizational research would benefit enormously if studies like this were conducted on all its major variables.

There are two conceptual differences between the handbook and Breugh and Colihan. First, they did not view job ambiguity as a dimension of stress, as does the handbook. This is not a major difference, since job ambiguity is considered to be a significant concept by the handbook and Breugh and Colihan. Second, they defined job ambiguity in subjective terms –note the use of “perception” in their definition –whereas the handbook views the concept in behavioural terms. Most of the handbook’s concepts are defined in behavioural terms, because this is the way the field typically defines them. Behavioural concepts, however, are usually assessed with perceptual measures.

“Job ambiguity” is usually referred to as “role ambiguity” in the field. The Breugh and Colihan label is more accurate, since most research on role ambiguity is conducted on jobs in work organizations.

Breugh and Colihan’s nine items are all stated positively, thus raising the possibility of response-set bias. They were aware of this possibility, but deliberately used only positively worded items. Breugh and Colihan believe it would be valuable to do additional research with positive *and* negative items. The handbook agrees with this need for additional research.

Breugh and Colihan scored their instrument in such a way that higher scores indicate less job ambiguity. It is generally recommended that higher scores indicate more, and not less, of a variable.

The handbook is concerned about two features of Breugh and Colihan’s research. First, although their factor analysis is exemplary, the analysis is only conducted on the nine items used to collect data about job ambiguity. Other major exogenous variables, such as the remainder of the stress variables, were not included in the factor analysis. The procedure used by Kim *et al.* in the first selection presents more powerful data supporting validity than does the Breugh and Colihan procedure. Second, Breugh and Colihan have clearly demonstrated that job ambiguity has three dimensions. However, they have not demonstrated the theoretical significance by indicating that the three dimensions have different determinants and consequences. Until the theoretical significance is demonstrated, the findings regarding the three dimensions are merely interesting.

This research demonstrates the same hostility towards global measures as does Breugh’s previously discussed research on job autonomy. The handbook does not quarrel with dimensional measures; they are clearly appropriate and represent a fruitful approach to measurement. However, global measures are also appropriate and should continue to have an important place in organizational research.

*Source*

Breugh and Colihan (1994).

**Deery *et al.* (1994)**

*Description*

This study was concerned with explaining organizational and union commitment[6]. The site for this research was a road traffic division of a large



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government utility in Melbourne, Australia; 249 union members, all of whom were white-collar employees, constituted the sample. The handbook is mostly interested in the measurement of job security and its consequences for commitment. Deery *et al.*'s label of "job security" will be used rather than the handbook's "job insecurity".

#### *Definition*

Job security is not explicitly defined. Deery *et al.* do not view job security as a dimension of stress.

#### *Data collection*

A mailed questionnaire was used to collect the data for the study. Three items on the questionnaire were used to collect data about job security:

- (1) I am confident that I will be able to work for (Org's name) as long as I wish.
- (2) My job is a secure one.
- (3) If my present job was eliminated I would be offered another in (Org's name)".

(The three items are question numbers 46-48 on the Deery *et al.* questionnaire.) These items are a shortened version of an instrument developed by Oldham and his colleagues (1986). Five responses were provided: "strongly agree, agree, unsure, disagree, and strongly disagree".

#### *Computation*

The items were scored from one to five, with "strongly agree" scored as five. To obtain a score for the scale, the scores for the items were summed then divided by three. The mean and standard deviation for job security are 3.26 and 0.81, respectively.

#### *Validity*

Two sets of data are pertinent for validity. First, a confirmatory factor analysis (CFA) was conducted with the 12 determinants in the proposed causal model. The CFA was conducted before the model was estimated. Measures which were supposed to cluster did so, and measures which were supposed to differ were different. Factor loadings are not presented for the 12 determinants. What is critical is that job security was included in the CFA along with autonomy, routinization, distributive justice, promotional chances, and external job opportunity[7]. Deery *et al.* interpret these CFA results as indicating acceptable discriminant and convergent validity of their measures. Second, job security was expected to increase organizational and union commitment. The results indicate that job security is not significantly related to either organizational or union commitment[8].

#### *Reliability*

Coefficient alpha for job security is 0.83.

*Comments*

Job security should have been defined. However, an examination of the questionnaire items indicates an implicit definition that is consistent with the handbook's likelihood of continued employment. Deery *et al.* do not view job security as a dimension of stress, as does the handbook.

The confirmatory factor analysis (CFA) provides the strongest evidence for the validity of the job security measure. What is especially important is that job security was factor analysed with five determinants widely used in organizational research (autonomy, routinization, distributive justice, promotional opportunity, and external job opportunity). It is unfortunate that other stress variables were not included in the analysis, as in the research by Kim *et al.* in the first selection, but it is gratifying to see the analysis extend beyond the variable being examined. The predictions for job security do not support the validity of its measures.

The coefficient alpha indicates very acceptable reliability.

Oldham *et al.* (1986) used ten items to collect data about job security. Future research by Deery and his colleagues might lengthen their scale with some of these items –a scale of five items should be sufficient –to see if this improves their predictions.

*Source*

Deery *et al.* (1994).

**Notes**

1. This definition is based on the work of House (1980; 1981). There are many approaches to the study of stress; the handbook's approach is mostly based on the work of the Survey Research Center (SRC). The major historical work in this area at the SRC is Kahn *et al.* (1964).
2. Stressors are viewed in behavioural terms by the handbook. "Strains" is often used to indicate subjective variables that are influenced by stress. Satisfaction is an illustration of one of these subjective variables.
3. These questionnaire items come from the questionnaire and not the article.
4. Kim *et al.*'s spelling of workload is used; the handbook uses two words for the concept.
5. The reader is reminded that "model" in LISREL does not correspond to the handbook's usage of model as equivalent to theory.
6. Organizational commitment was measured by the scale proposed by Porter *et al.* and used by the handbook. Union commitment was assessed with the measure developed by Gordon and his colleagues (1980).
7. Deery *et al.* use autonomy to refer to power regarding the job, what the handbook labels as "work autonomy". The handbook uses autonomy to refer to the organization's power relative to its environment.
8. When union commitment is viewed in dimensional terms, job security positively and significantly increases "responsibility to the union".

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## 27. Technology (I)

Technology (I)

### **Definition**

Technology is the process of transforming inputs into outputs (Scott, 1981, p. 17)[1]. The classic inputs, or factors of production, are land, labour, plant, and equipment. Output refers to anything – goods or services – produced by the organization. Material pertinent to technology is also found in discussions of the organization's economy and work flow.

Technology is a concept like power: it refers to a class of behaviour and is not a variable. The handbook views technology as consisting of six variables: complexity, interdependence, mechanization, routinization, standardization, and technical complexity. Each of these six variables will be treated in a separate section in the two chapters on technology.

507

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### **Complexity**

#### *Definition*

Complexity is the degree of formal differentiation within an organization (Hall, 1996, pp. 51-6). A highly complex organization is characterized by many occupational roles, subunits (divisions and departments), levels of authority, and operating sites. The word "formal" in the definition signifies that this differentiation is officially established by the organization, that is, the differentiation is supported by the organization's sanctions. Horizontal, vertical, and spatial complexity are commonly distinguished dimensions. Occupational roles and subunits illustrate horizontal complexity, levels of authority are vertical complexity, and the numbers of operating sites represent spatial complexity. Discussions under the following labels usually contain information pertinent to horizontal complexity: division of labour, specialization, role differentiation, fragmentation, segmentation, fractionalization, job enlargement, work simplification, job enrichment, functional differentiation, and social differentiation. Material relevant to vertical complexity is found in discussions of flatness/tallness and configuration. Spatial complexity is sometimes discussed as dispersion[2].

The proliferation of terms for complexity illustrates the need for their standardization. It is difficult to attain cumulation (scholars building on each other's research) when terms proliferate. Because of the different labels, researchers working on the division of labour, for example, may not recognize the relevance of work on specialization, role differentiation, fragmentation, fractionalization, job enlargement, work simplification, and job enrichment. Without cumulation, of course, there is much duplication of work – the wheel continues to be reinvented.

The handbook views complexity as a dimension of technology, that is, the process of transforming inputs into outputs can vary by its degree of formal differentiation. Complexity is thus a domain within the more general concept of

technology. Where appropriate, the handbook dimensionalizes its concepts – and the situation of complexity is an appropriate dimensionalization.

Organizational scholars have obtained some of their concepts from Weber's rational variant of bureaucracy (Albrow, 1970). For example, Weber's emphasis on rules and regulations, which are typically written, seems to be a source for the current concept of formalization. Or again, Weber's focus on hierarchy of authority is very similar to the present concept of centralization. In the present situation, Weber's subdivision of work among occupational roles – the division of labour – is the component of complexity. Rather than view Weber's rational variant of bureaucracy as a cluster of variables, contemporary organizational scholars treat its components as separate concepts. No attempt is made to use Weber's cluster of variables as a concept. This approach to Weber appears to have originated with Hall's (1963) widely cited critique of Weber's concept of bureaucracy.

Two additional terms, diversification and mass production, require a brief discussion. There is a substantial organizational literature on diversification (Donaldson, 1982), stemming mostly from Chandler's (1962) classic work on strategy and structure. The DuPont Corporation, for instance, diversified when it broadened its product line from explosives to chemically based products, such as paints, varnishes, and dyes. The handbook suggests that diversification is accompanied by increased complexity, especially horizontal and spatial complexity. Since material treated under diversification can thus be treated under complexity, *two* concepts are not required. Mass production, in the handbook's view, includes complexity, mechanization, and technical complexity. The division of labour is a dimension of complexity, since a system of mass production is characterized by an extensive division of labour. The handbook has no chapter on mass production, because material that would be treated under this label is examined under complexity, mechanization, and technical complexity. Since the handbook prefers that each of its labels refer to a single concept, mass production is not treated as a separate label since it refers to three concepts.

#### *Measurement*

Organizations commonly maintain records that indicate their formal differentiation and scholars studying complexity typically use such records to collect data. Complexity is thus like absenteeism and administrative intensity in that, unlike most topics in the study of organizations, it is generally investigated by studying records. In the first selection, by Blau and Schoenherr (1971), records are used to study complexity. Where records are readily available as the basis for valid and reliable measures, it is feasible to examine a relatively large sample of organizations. As an example, Blau and Schoenherr had an *N* of 53 in their study. The study of organizations has moved from case studies in the 1940s and 1950s to relatively large samples, mostly since 1960, partly by capitalizing on the availability of records to study concepts. Large samples make it possible to estimate organizational-level models by multivariate

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statistical techniques, such as regression analysis. The work of Blau and Schoenherr illustrates the advantage of large samples. The second selection, Kalleberg *et al.*'s National Organization's Study (NOS), collects its data by telephone interviews rather than by records. Kalleberg *et al.* also view complexity in a slightly different manner than Blau and Schoenherr.

*Blau and Schoenherr (1971)*

*Description.* Descriptive information about the Blau and Schoenherr study was presented in the chapter on size and need not be repeated here. The site for their study was state employment security agencies in the USA.

*Definition.* Complexity is defined as "the number of structural components that are formally distinguished" by the organization (p. 302)[3]. Four dimensions of complexity are distinguished: division of labour, major subunits, number of hierarchical levels, and the number of local offices (pp. 49-50, 80)[4]. The fourth dimension, spatial complexity, is not a major concern for Blau and Schoenherr[5].

*Data collection.* Data collection and measurement will be discussed for the entire agency. Information to measure the division of labour came from the "official personnel roster" (p. 17)[6]. Major subunits and the number of hierarchical levels were measured with data from organizational charts (pp. 401-4). Since spatial complexity is not a major concern, the source of data for its measurement is not specified. It is clear from the general thrust of the data collection, however, that information about the number of local offices comes from organizational records.

*Calculation.* The division of labour was measured by the number of official job titles, not counting different grades within one job title (p. 374). Major subunits were assessed by the number of divisions in the headquarters, whose head reports to the director or deputy director. A division must have at least five employees (p. 374). The number of hierarchical levels was gauged by the number of supervisory strata in the headquarters division with the most supervisory strata; assistant supervisors and deputies were not counted as distinct levels (p. 374). Spatial complexity was determined by counting the number of local offices (p. 80). For the division of labour, major subunits, and hierarchical levels, the means and standard deviations are 105.70 and 45.41, 6.60 and 2.53, and 6.00 and 1.11 respectively (p. 374). There were 1,201 local offices in the state agencies studied (p. 23).

*Validity.* Two of the major findings of the study are that increasing size generates complexity at decelerating rates, and that increasing complexity produces greater administrative intensity (pp. 297-329)[7]. Size is treated in Chapter 24 of this handbook; here it will simply be noted that Blau and Schoenherr measured size by the number of full-time employees in an agency. Administrative intensity is defined as the extent to which an organization allocates resources to the management of its output. Since these findings are consistent with propositions in the literature, they support the construct validity of the measures.

*Reliability.* No data are presented about the reliability of the measures.

*Comments.* Blau and Schoenherr's definition of complexity is basically the definition used by the handbook. However, Blau and Schoenherr refer to their concept as both "complexity" and "differentiation". Clarity would have been enhanced by the use of a single label. Although both labels are used in the literature, the handbook retains the label of complexity, because there is no compelling reason to change from the 1972 edition. A single label is chosen to promote a more standardized terminology.

Blau and Schoenherr's use of records to measure complexity is excellent. Complexity can be measured readily in this manner, and the researchers took full advantage of the opportunity. Blau and Schoenherr's careful description of the records used, especially in their appendices, should make it fairly easy for other scholars to replicate their research.

Four comments about the calculations are appropriate. First, the details needed to perform the calculations are, as a rule, clearly indicated. In measuring the division of labour, for instance, the reader is instructed not to count the different grades within one job title[8]. Anyone who has tried to count the number of job titles in an organization will appreciate this detail. Second, although it is the convention, no rationale is presented by the researchers for measuring the number of hierarchical levels in the division where the number is the highest, or "deepest" as is sometimes stated. Since there are multiple hierarchies of authority in organizations, the number of levels could be assessed by calculating an arithmetic mean for the different levels. Whichever measure is used, a rationale should be provided[9]. Third, detail is lacking regarding spatial complexity, probably because it is not a central part of the analysis. The number of operating sites was easy to measure in the agencies that Blau and Schoenherr studied; they simply counted the number of local offices. In many situations, however, determination of an operating site will not be so easy. For example, an operating site probably exists where there is a mailing address and some physical assets legally belonging to the organization. A post-office box would not qualify as an operating site. More detail is needed about the meaning of this term. Fourth, the means and standard deviations are valuable, since they facilitate comparison.

The researchers do not treat validity and reliability adequately. There are data pertinent to validity, but no information is provided about reliability. This is a puzzling omission in an otherwise excellent study.

*Source.* Blau and Schoenherr (1971).

*Kalleberg et al. (1996)*

*Description.* What is pertinent about the National Organizations Study (NOS) at this point are its data about structural differentiation. The basic descriptive information about the NOS was presented in the chapter on administrative intensity.

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*Definition.* Structural differentiation is not defined. The concept indicated by this label, however, has vertical and horizontal components. The horizontal component is termed “departmentalization”.

*Data collection.* Data to measure the vertical component of structural differentiation were collected by the following question during the telephone interview: “About how many vertical levels are there between the highest and lowest positions at [org], including both the highest and lowest levels?” (This was question number 69 on the telephone-interview schedule.) A blank was provided for the interviewer to record the number of levels. “org”, of course, refers to the respondent’s employer.

Information to assess horizontal differentiation, or departmentalization, was obtained by two questions. The respondent was first asked: “Now I’d like to ask you about how work is organized at [org]. Is there at least one employee whose main responsibility is ...” Eight labels were then read to the respondent: “finance, accounting, health and safety, public relations, personnel or labour relations, research and development, long-range planning, and marketing or sales”. The respondent could answer “yes” or “no” to each of the eight labels. The second question asked the respondent: “Is there a separate department or section responsible for [item]?” “Item” refers to the labels. The respondent could answer as before. (The two items are question numbers 68a and 68b on the telephone-interview schedule.)

*Computation.* Asking the respondents about the number of levels, of course, yields a number. The unweighted mean for number of levels is seven and the standard deviation is ten (p. 74)[10]. Because of their positive skew, the data were subjected to a natural logarithmic transformation in the analysis.

The departmentalization scale is the proportion of the eight departments present in an organization. Each of the previously mentioned labels constitutes a department. For construction of the scale, values for “don’t know” were imputed using logistic regression, if the respondent answered five or more of the departmentalization items. The unweighted mean and standard deviations are 0.26 and 0.31; the corresponding weighted scores are 0.03 and 0.12 (p. 74).

*Validity.* Structural differentiation is a key variable in the explanation of administrative intensity. Size is believed to increase the number of vertical levels and departments. An increase in the number of vertical levels is hypothesized to produce greater decentralization, whereas an increase in the number of departments is hypothesized to result in greater formalization. Increased decentralization and formalization are believed to impact negatively on administrative intensity. Finally, the number of levels and departments are thought to decrease the level of administrative intensity. The results for all of these predictions are as anticipated (pp. 69-86), thereby demonstrating the construct validity of the measures of structural differentiation.

*Reliability.* Cronbach’s alpha for departmentalization is 0.86 (p. 74).

*Comments.* The NOS’s implicit concept of complexity – to use the handbook’s label – both resembles and differs from the handbook’s view of the concept. Both concepts assess horizontal and vertical complexity, so on these two critical

dimensions the concepts are the same. However, the number of horizontal units – the handbook’s view – differs from the number of *specialized*, horizontal units – NOS’s view. The NOS definition is more stringent in defining a department than is the handbook. There must be specialization for the NOS, whereas the absolute number is all that matters for the handbook. The NOS also does not include the number of occupational roles and sites in its conceptualization. There is no reason why the number of departments should not be termed “departmentalization”, as in the NOS. However, the handbook, in conformity with a substantial amount of organizational literature, seeks to standardize departmentalization as the subdivision of work (Chapter 8). The NOS should have provided an explicit definition of complexity.

Four comments are pertinent about the list of possible departments used by the NOS. First, the range of departments is almost totally restricted to administrative staff activities. Only “marketing and sales” are not part of the administrative staff[11]. There are, for example, no departments from the production component of the organization. A broader range of possible departments is needed. Second, “health and safety” could be two departments in some organizations, especially the larger ones. Each possible department should refer to a single, specialized activity. Third, “personnel or labour relations” is now generally termed “human resource management”. The newer label should be used. Finally, “marketing and sales” does not seem appropriate for many non-business organizations, such as government agencies. More effort should have gone into developing the list of possible departments.

One of the commendable features of the NOS is its ability to take a fresh approach to old measurement problems. This fresh approach was first apparent earlier in the discussion of effectiveness, particularly in the determination of goals. Organizational scholars doing field research often spend quite a bit of time measuring vertical complexity. There is first the issue of determining what constitutes a “level”. Administrative assistants, for instance, complicate the determination of the number of levels. Another issue is which path down from the top is to be used in counting the number of levels, since the number of levels – once the meaning of “level” is determined – varies by the path taken to the bottom. The NOS simply asks each respondent to estimate the number of levels between the highest and lowest levels. This simple interview item will probably yield information quite consistent with the results provided by complicated field studies. However, in future research it would be good to check the interview data with careful calculations from a field study. The NOS’s fresh approach is similar to the originality demonstrated by the Aston and Blau studies of the 1950s and 1960s.

The psychometric properties of the NOS measures are quite acceptable. What is especially impressive are the results which are consistent with the current explanation of administrative intensity. The coefficient alpha for horizontal complexity is also impressive. Future research should expand the NOS’s concept to include the number of occupational roles and operating sites, since these are traditional components of complexity.

*Source.* Kalleberg *et al.* (1996).



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## Interdependence

### *Definition*

Interdependence is the extent to which employees depend on others in their work group to perform their jobs (Jermier and Berkes, 1979). Research scientists are typically rather low on interdependence, whereas assembly-line workers are quite high. The term “task” commonly precedes interdependence when reference is made to organizational work. Neither the 1972 nor the 1986 versions of this handbook contained material about interdependence.

In addition to being characterized by the degree of structural differentiation (complexity), the process of transforming inputs into outputs can also be characterized by the extent to which employees depend on others in their work groups to perform their jobs. Complexity and interdependence are domains, or dimensions, within the more general concept of technology. Technology subsumes, or includes, complexity and interdependence.

Breaugh (1985) argues that interdependence must not be confused with work autonomy. The extent to which an employee depends on work-group members in performing his/her job must be distinguished from the amount of power that an employee has relative to his/her job. Breaugh argues that interdependence and work autonomy are often confused in research, thereby resulting in mixed findings.

### *Measurement*

The measurement selection for interdependence comes from the work of Morris and Steers (1980). Both of these scholars work in the tradition of organizational research begun by Porter, whose work has previously been discussed in the chapter on commitment. Porter is a major contemporary proponent of expectancy theory, originally formulated for organizational research by Vroom (1964).

### *Morris and Steers (1980)*

*Description.* The purpose of the research reported in this article was to examine the influence of five structural variables on organizational commitment. What is significant at this point is that “perceived functional dependence” is one of these five structural variables; it is this variable which will be the focus of this selection. The sample consisted of 262 non-faculty employees of a major US university. Included in the sample were building and grounds workers, clerical staff, administrators, and analysts.

*Definition.* Perceived functional dependence is defined as “the degree to which the respondent was directly dependent upon the work of others as inputs to and/or influences on his or her work” (p. 52).

*Data collection*[12]. Data about the five structural variables and commitment were collected by mail questionnaires sent to and returned by the respondents through campus mail. Respondents were given the following instructions: “Listed below are statements that represent possible feelings that people might have about their jobs or the particular organizations in which they work. For

each statement, place a check on the line above one of the seven alternatives which best describes *your* degree of agreement or disagreement with the statement. Please answer all questions". Three questions were used to collect data about perceived functional dependence:

- (1) In order to do my job I am very much dependent on my fellow workers to do their jobs too.
- (2) The kind of job I have requires that I work closely with others who have a job similar to mine.
- (3) The way in which my fellow workers do their work has *very little* to do with whether or not I can do my job.

As previously indicated, an agree-disagree format was used.

Seven possible responses were provided: "strongly disagree, moderately disagree, slightly disagree, neither disagree nor agree, slightly agree, moderately agree, and strongly agree". Morris and Steers indicate that these three items used to collect data about perceived functional dependence were always embedded among other measures, that is, they were not grouped as a unit.

*Computation.* The scoring is not explicitly indicated. A seven-point scale was apparently used, with "strongly agree" scored as seven. The scores on the three scales seem to have been summed and divided by three to obtain a total scale score. For the third item, however, the scores were reversed. The mean and standard deviation are 4.65 and 1.73 respectively.

*Validity.* Two sets of data are pertinent for validity. First, the intercorrelations between the five structural measures range from  $-0.11$  to  $0.23$ , with a median  $r$  of  $0.08$  (p. 53)[13]. In addition to perceived functional dependence, the five other structural variables are as follows: decentralization, formalization, supervisory span of control, span of subordination, and work group size[14]. These four variables are traditionally defined. Second, as anticipated, the regression analysis indicates that perceived functional dependence increases commitment in a statistically significant manner. Commitment was defined and measured according to Porter and his colleagues (1974).

*Reliability.* Coefficient alpha for perceived functional dependence is  $0.73$ .

*Comments.* Morris and Steers' definition of perceived functional dependence is quite similar to the handbook's conceptualization of interdependence. Both definitions, for example, view the concepts in behavioural terms. The handbook, however, does not use the label of "perceived" for the concept, because perception moves away from the idea of behaviour which is the way objectivity is viewed. Interdependence is a more widely used label than functional dependence – thus the handbook's use of interdependence. The work of Kiggunda (1983) has helped to popularize the interdependence label[15].

A sensitivity to the possibility of response-set bias is demonstrated by Morris and Steers, who used two positive and one negative item in their scale. This sensitivity is commended.

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The scoring should have been explicitly indicated. It is possible to reconstruct the scoring from data in the article and traditional usage. However, this reconstruction should not be necessary.

Additional work is needed to improve the psychometric properties of the scale. Two steps are especially needed regarding validity. First, the six structural determinants proposed by Morris and Steers need to be supplemented by a more extensive causal model of commitment, such as the one proposed by Han and his colleagues (1995). The more extensive model will provide a more stringent test of discriminant and convergent validity for interdependence, to use the handbook's label. Second, the more extensive list of determinants should be subjected to a confirmatory factor analysis (CFA). CFA, of course, was not used very much when Morris and Steers did their work. To increase reliability, the scale should be lengthened, perhaps to four or five items. Three additional items which might be used are contained in Jermier and Berkes (1979).

*Source.* Morris and Steers (1980).

### **Mechanization**

#### *Definition*

Mechanization is the degree to which an organization uses inanimate energy in its operations[16]. Common examples of mechanization are computers, electric typewriters, power tools, robots, motors, machines, cranes, and forklifts. Mechanization is often discussed in the organizational literature under the rubric of "automation". To the handbook, automation represents a very high degree of mechanization – two labels are not needed. Material pertinent to mechanization is also commonly found in discussions of industrialization and modernization. Industrialization and modernization, however, use the society rather than the organization as the unit of analysis. It is important to note that mechanization constitutes a core component of these terms, especially for industrialization.

Two points about this definition require emphasis. First, mechanization refers both to the production system and to the management system of an organization. Since production is the most important part of an organization, studies of mechanization commonly focus on the production system. The handbook believes it is also important to study mechanization of the organization's system of decision making, co-ordination, and control, that is, the management system. The definition, therefore, refers to "operations" rather than to production or management. Second, the use of tools and equipment is not mechanization[17]. A horse-drawn plough, for example, is not mechanization because the energy source is the horse, which is animate. Use of a tractor to plough a field is an example of mechanization, however, because its source of energy is a petrol or diesel engine, which is inanimate. It is only when the tools and equipment depend on inanimate sources of energy (and the particular source is not important) that they are discussed in the context of mechanization.

In addition to being characterized by the extent to which employees depend on others to perform their jobs (interdependence), the process of transforming inputs into outputs can also be characterized by the degree to which an organization uses inanimate energy in its operations. Interdependence and mechanization are domains, or dimensions, within the more general concept of technology. Technology subsumes, or includes, interdependence and mechanization.

*Measurement*

This section discusses two very different measures of mechanization. The first selection, by Lincoln and Kalleberg (1990), is presented in the handbook's standardized format. However, the second selection, by Marsh and Mannari (1976), does not follow the handbook's usual format. Marsh and Mannari basically offer some brief comments on mechanization as they discuss the modernization of Japanese factories. The approach by Marsh and Mannari to mechanization is common in organizational research.

*Lincoln and Kalleberg (1990)*

*Description.* The purpose of this study was to explain work attitudes. Organizational commitment and job satisfaction were the two work attitudes examined. The causal sequence runs from organizational context through organizational structure to job attributes and to commitment/satisfaction. Of major concern to the handbook is the material about the impact of organizational context on organizational structure. Automation is a variable included in the organizational context and is the focus of this section.

The sites for the study were 52 US and 46 Japanese manufacturing plants (p. 46). Data collection was limited to one urban region in each country. What is central to the handbook is the data provided by plant managers in each of the US and Japanese plants, because this is how the data about automation were obtained. Data collection in each plant began with the plant managers; 234 and 253 plant managers were interviewed in the US and Japanese plants respectively.

*Definition.* Automation is not explicitly defined. However, the meaning of automation is quite clear, since Lincoln and Kalleberg assess automation with Amber and Amber's (1962) widely used scale. The Aston studies (Pugh *et al.*, 1968, 1969) gave wide currency to the Amber and Amber scale.

*Data collection*[18]. Data to measure automation were collected by interviews with plant managers[19]. Two questions were used to collect the data. The managers were first asked: "From the following list, which item describes the *most automatic* piece of machinery in this plant. (Do not count machines regulating temperature among automatic machines.) Write the letter corresponding to the most automatic piece of machinery here: \_\_\_\_\_".

The following list of equipment was apparently shown[20] to the plant managers:

- (1) Hand tools and manual machines (pliers, hammers, files, etc.).
- (2) Powered machines and tools. Muscles are replaced for the basic machine function, but machine action and control are completely dependent on the operator. Uses mechanical power, but man positions work and machine for desired action (example: electric tools).
- (3) Single-cycle automatics and self-feeding machines (completes an action when initiated by an operator. Operator must set up, load, initiate actions, adjust, and unload. Example: production machines without accessory automatic control system, grinder, planer, lathe, etc.).
- (4) Automatic: repeats cycle. (At this level all energy is mechanized. Carries out routine instructions without aid by man. Starts cycle and repeats actions automatically – self-feeding. Loads, goes through sequence of operations, unloads to next station or machine. No self-correction but obeys internal programme such as cams, tapes, or cards. Example: engine production lines, self-feed press lines, automatic copying lathe, etc.)
- (5) Self-measuring and self-adjusting feed-back. (Measures and compares results to desired state and adjusts to minimize error. Although feedback control of the actual surface of workpiece is preferable, positional control of the machine table or tools is of great value, too. Example: feed-back from product, automatic sizing grinders, size-controlled honing machines, process controllers, etc.)
- (6) Computer control: automatic cognition. (Computer monitors multiply factors on which machine or process performance is predicated – evaluates and reconciles them to determine proper control action.)

After listing the most automatic piece of machinery in the plant, the managers were then asked: "From the same list (above), which item best describes the *bulk* of the machinery used in production in this plant. Write the letter corresponding to most of your machinery here: \_\_\_\_\_". (The two questions in this paragraph are numbers 2a and 2b in the "Plant general manager questionnaire". These questions do not come from the book.)

*Computation.* The scoring ranges from zero to five, with five indicating a greater degree of mechanization. Assignment of numbers for the two questions is not clear, however[21]. The mean and standard deviation for the US plants are 7.92 and 2.60; the corresponding statistics for the Japanese plants are 7.34 and 1.81 (p. 190).

*Validity.* The results of a regression analysis provides two sets of data pertinent to validity. First, as expected, the larger plants are more automated (p. 192). Second, of the seven industries included in the sample, "printing and publishing" is the most automated[22]. Lincoln and Kalleberg note that "the high automation of modern printing and publishing is not surprising..." (p. 196). These data corroborate the construct validity of the measurement of automation.

*Reliability.* The correlation between the two components of the automation scale is 0.57 (p. 196).

*Comments.* The use of the Aston measure of automation is a welcome addition to the literature, since there seems to have been a decreasing use of the Aston measures by organizational scholars. This study, plus the NOS by Kalleberg *et al.* (1996), have helped to keep alive Aston's pioneering measurement research. What is needed now is a series of measurement studies which seek to improve the Aston measures.

Although automation was not explicitly defined, its location within the Aston tradition indicates that it corresponds to the handbook's usage of mechanization. Although automation was not a major concern to Lincoln and Kalleberg, it should have been explicitly defined.

Two minor comments are in order about the collection of data. First, it is not clear whether the list of equipment was read or shown to the plant managers. The reference here is to the first question used to collect information. Second, although the study clearly indicates that the plant managers were interviewed, the schedule reads as if the manager was completing a questionnaire. Note especially the writing instructions in the previous sections on data collection. These are small points that should be clarified.

The scoring should have been indicated for the two items used to increase automation. Replication will be hindered without this information.

The psychometric properties of the automation scale are marginally acceptable. Three points are pertinent. First, the material about construct validity that was summarized is a plus, but it would have been even more impressive to have done a factor analysis of the considerable data collected from the plant managers. The managers supplied information about structure of the plants, its technology, its management practices, and basic contextual information (p. 42). Second, the measure of automation only considers the plant's production system. This means that the management system's degree of automation is ignored. Marsh and Mannari's study provides a measure of mechanization which assesses an organization's production and management systems. Third, the score for reliability is too low. Lincoln and Kalleberg's measurement of mechanization, therefore, needs to be considerably improved. The measurement of mechanization was, of course, not Lincoln and Kalleberg's principal concern.

*Source.* Lincoln and Kalleberg (1990).

*Marsh and Mannari (1976)*

The Lincoln and Kalleberg measure provides one way to assess mechanization. Marsh and Mannari provide another approach.

Marsh and Mannari measure mechanization by the amount of electricity consumed per employee (p. 109). This consumption is usually expressed in kilowatt hours. The Marsh and Mannari measure is probably a fairly valid indicator of mechanization, since most of the tools and equipment of an organization are driven by electricity. Although the source of the electricity

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varies (coal and oil are the most common sources), it is electricity that finally drives the tools and equipment. Organizations, however, use a sizeable amount of inanimate energy that cannot be measured in kilowatt hours of electricity consumed. For example, many of the tools and equipment of an organization – such as trucks – are driven by motors which do not depend on electricity for their driving force, as, for example, does a computer. Therefore, it is not clear to what extent the inanimate energy used by the typical organization is reflected accurately in its consumption of electricity.

The Marsh and Mannari measure is a general measure, since it refers to “employees” rather than to “production employees”. Some measures of mechanization examine only electricity consumed by production employees, with no rationale given for this focus (Lincoln and Kalleberg, 1990; Melman, 1958, pp. 152-96). An examination of electricity consumption that restricts itself to production employees ignores the use of mechanization by managerial employees of an organization, and is thus clearly inferior to the Marsh and Mannari measure. As previously indicated, mechanization refers to both the production system and the management system of an organization, and a valid measure of mechanization thus must include the amount of electricity consumed by employees from both of these systems[23].

The Marsh and Mannari measure also refers to amount of electricity consumed per employee rather than to “installed horsepower” per employee (Melman, 1956)[24]. Although installed horsepower can be translated into kilowatt hours (Price, 1972b, p. 135), it is probably best to use the Marsh and Mannari approach. There is little reason to translate the commonly used kilowatt hours into the less-commonly used installed horsepower; Jerome (1934) and Thorp (1929) have also severely criticized installed horsepower as a measure of mechanization.

The handbook has sought to use records as much as possible as sources of data for the measures. The amount of electricity consumed per employee will most likely be available from the organization’s utility bills. The amount is also probably expressed in kilowatt hours. Since the organization knows its number of employees, it is a relatively simple matter to compute the amount of electricity consumed per employee[25]. There seems to be little reason to measure mechanization with data collected by interviews, questionnaires, or observations, since the data are readily available in records. It would be appropriate, however, to use interview or questionnaire data to assess the validity of a record-based measure of mechanization.

#### Notes

1. Scott’s definition is consistent with Perrow’s definition of technology. Perrow’s definition was widely used for many years. Thompson’s work (1967) is a classic in the study of technology.
2. An example of the use of dispersion for spatial complexity is Price (1972b, pp. 90-3).
3. Blau and Schoenherr, at this point, refer to “differentiation” rather than “complexity”. As will be indicated later, Blau and Schoenherr use both labels to refer to the same concept.

4. The labels for the first three dimensions come from pp. 401-4.
5. Blau and Schoenherr refer to "spatial differentiation" and not to "spatial complexity" (p. 80). Spatial complexity is used in the handbook to standardize terminology.
6. See Blau and Schoenherr, pp. 382 and 401 for more detail about the records used to measure the division of labour.
7. Blau and Schoenherr's labels here are changed slightly to obtain more standardized labels.
8. The number of job titles may not always be a valid measure of the division of labour. There can, for example, be more titles than the division of labour justifies. See Baron and Bielby (1986) for a discussion of the number of job titles as a measure of the division of labour.
9. Organizational size must also be taken into account when counting levels (Child, 1984, p. 59). Blau and Schoenherr make no mention of size when describing their computations.
10. Kalleberg *et al.*'s use of weighting was discussed in the chapter on administrative intensity.
11. The handbook views "marketing and sales" as part of the organization's economy.
12. The handbook thanks Professor Morris for providing information about the measurement of interdependence. In this paragraph, the questions refer to the information provided by Professor Morris.
13. Morris and Steers do not view these intercorrelations as providing data relevant to validity.
14. The handbook does not view size as a structural variable.
15. Kiggundu refers to "task interdependence" rather than "interdependence". He also distinguishes different types of interdependence, initiated and received.
16. This definition of mechanization comes basically from Faunce (1968, pp. 42-4).
17. Quite a few scholars include tools and equipment as part of mechanization (Jerome, 1934, pp. 41-2; Landes, 1969, pp. 44-123). Inclusion or exclusion of tools and equipment as part of mechanization is probably not a major issue, since most of the tools and equipment in contemporary organizations use inanimate energy for their operation.
18. Professor Lincoln graciously provided the handbook with a copy of the "Plant general manager questionnaire" used to collect data.
19. Other managers than the plant managers were sometimes interviewed (p. 42). The handbook uses "plant manager" to simplify its presentation.
20. It does not seem reasonable that the interviewer "read" these instructions to the plant managers. "Shown", therefore, appears to be a more reasonable interpretation. The list had letters rather than numbers.
21. The scoring also could not be located in the Aston source cited (Pugh *et al.*, 1968).
22. Organizations from the following seven industries were sampled: transportation equipment, electronics/electric equipment, chemical, pre-fabricated metals, non-electrical machinery, and printing/publishing (pp. 44-5).
23. One reason for possibly excluding managerial employees from calculation of the amount of electricity consumed is that many of them, at least historically, used little inanimate energy in the performance of their work. Administrators in contemporary organizations, however, commonly make use of mechanization, such as computers, as do clerical, secretarial, professional, and maintenance employees.
24. Melman refers to installed horsepower per "wage-earner". His measure is thus restricted to the production system, since this is where most "wage-earners" are located.
25. Counting the number of employees is not without problems. These and other issues in the measurement of size are discussed in Chapter 24 of this handbook.



### **Routinization**

#### *Definition*

Routinization is the degree to which a job is repetitive[1]. A high degree of repetitiveness signifies a highly routinized job. Clerical and labouring jobs are typically highly routinized, whereas professional and craft jobs are usually lowly routinized. Material relevant to routinization is found under a diversity of labels: variety, task variability, formatted tasks, task predictability, uncertainty, and work-flow predictability. The use of variety is especially widespread, stemming mostly from the important job diagnostic survey (Hackman and Oldham, 1975). The term “routinization” is also widely used in the literature, however, and since it was used in the 1972 and 1986 editions of this handbook, this revision will continue to use the term.

Weber’s use of routinization concerning charisma (Bendix, 1960) has introduced the term to organizational scholars. The handbook’s usage of routinization, however, comes from Perrow’s (1967; 1970) widely cited work on technology.

In addition to being characterized by the degree to which an organization uses inanimate energy in its operations (mechanization), the process of transforming inputs into outputs can also be characterized by the degree to which the process is repetitive. Mechanization and routinization are domains, or dimensions, within the more general concept of technology. Technology subsumes, or includes, mechanization and routinization.

Routinization is sometimes confused with the division of labour dimension of complexity. When the subdivision of labour is high, as is often the case in a factory, a great many jobs are highly routinized. This relationship need not always hold, however. For example, the subdivision of labour is high in university hospitals, but in these organizations a great many jobs are lowly routinized, especially those of the professional staff. In short, the subdivision of labour dimension of complexity can be associated with either highly or lowly routinized jobs. Routinization thus must not be confused with an extensive subdivision of labour.

#### *Measurement*

The first measurement selection, by Price and Mueller (1986), builds on the widely cited research by Hage and Aiken (1970) and Perrow (1967; 1970). Price and Mueller use very traditional questionnaire items in the construction of their scale to measure routinization. Although Wall *et al.* (1993) – the second measurement selection – collect their data by questionnaire, they use very different items than Price and Mueller. Another advantage of Wall *et al.*’s research is that it is based on British data. Price and Mueller’s data are exclusively American.

*Price and Mueller (1986)*

*Description.* The purpose of this research was to explain absenteeism and turnover. These dependent variables were defined as they are in the handbook. The site for this research was five voluntary, short-term, general hospitals located in a western state. All of the hospitals' 2,192 employees were included in the sample. Nurses were the largest category of employees.

*Definition.* Routinization is defined as the "degree to which jobs in an organization are repetitive" (p. 11).

*Data collection.* Five questionnaire items were used to collect data about routinization:

- (1) To what extent does your job require that you *keep learning new things*?
- (2) How often do you get to do a *number of different things* on your job?.
- (3) To what extent does your job require a *high level of skill*?
- (4) To what extent does your job require that you *do the same things over and over again*?
- (5) How *creative* does your job require that you be? (pp. 256-7).

The responses were different for each of the five items:

- (1) must always be learning new things, quite often, sometimes, rarely, and never required to learn new things;
- (2) always doing different things, quite often, sometimes, rarely, and never do different things;
- (3) a very high level of skill required, quite high level, somewhat high, low level, and a very low level of skill required;
- (4) always do the same things over and over again, quite often, sometimes, rarely, and never do the same things over and over again; and
- (5) required to be very creative, quite creative, somewhat creative, very little, and no creativity required (pp. 256-7).

*Computation.* The scoring ranges from one to five, with five indicating the greatest routinization. Scores of five were assigned to the following items: "never required to learn new things, never do different things, a very low level of skill required, always do the same thing over and over again, and no creativity required". Scores of the five items were summed to obtain a total score for the scale. The mean and standard deviation are 13.05 and 3.41 (p. 56).

*Validity.* Two sets of data are pertinent for validity. First, 12 exogenous variables were hypothesized as determinants of absenteeism and turnover (p. 10). When these 12 variables were subjected to an exploratory factor analysis, the five items for routinization yield a single factor with loadings of 0.74, 0.59, 0.69, 0.49, and 0.61 (p. 257). (The sequence of these loadings corresponds to the previous list of five items used to collect data.) Second, routinization was hypothesized to impact negatively on satisfaction (p. 10), thereby indirectly increasing absenteeism and turnover. The results indicate that routinization

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significantly decreases satisfaction; however, the total impact of routinization on turnover is small (0.03) and its direction is unanticipated, positive rather than negative (p. 112).

*Reliability.* Coefficient alpha for routinization is 0.78 (p. 257).

*Comments.* The definition of routinization is the same as the handbook's, so there is not a problem of relevance.

Understanding of data collection and scoring is facilitated by reproducing the questionnaire and the measurement information in an appendix (pp. 235-52 and pp. 255-66). The publishers are to be applauded for allowing the reproduction.

The five questionnaire items did not make much allowance for possible response-set bias. For four of the questions, the response indicating the most routinization was placed last. The responses should have been varied.

The psychometric properties of the scale are quite acceptable. However, it would have been better for Price and Mueller to have done a confirmatory factor analysis rather than an exploratory one. Since a LISREL analysis was not done, it is not clear whether or not routinization's total impact on turnover was statistically significant. The importance of routinization's unanticipated total impact is thus not clear. An important aspect of Price and Mueller's routinization scale is that various versions of the scale have been used in later research, with results essentially confirming what Price and Mueller found in 1986 (Agho *et al.*, 1993; Brooke and Price, 1989; Han *et al.*, 1995; Iverson and Roy, 1994; Kim *et al.*, 1996; Mueller and Price, 1990; Mueller *et al.*, 1994).

*Source.* Price and Mueller (1986).

*Wall et al. (1995)*

*Description.* The purpose of this research was to propose new concepts to describe job features and to develop measures for these concepts. An attempt was also made to provide baseline data for these new concepts and measures. The five proposed concepts are as follows: timing control, method control, monitoring demand, problem-solving demand, and production responsibility. A discussion of these concepts is found in Jackson *et al.* (1993). The focus of the handbook is on "problem-solving demand".

Five samples of employees were studied: a clothing manufacturer ( $N = 915$ ), a company making electro-mechanical components ( $N = 163$ ), a chemical process plant ( $N = 351$ ), a microelectronics company ( $N = 205$ ), and a metal die manufacturing company ( $N = 57$ ). These five samples were selected to represent a wide range of traditional and new technology jobs in very different industrial sectors.

*Definition.* Problem-solving demand "...reflects the more active, cognitive processing required to prevent or recover errors" (Jackson *et al.*, 1993, p. 754).

*Data collection*[2]. Five questionnaire items were used to collect data to measure problem-solving demand. The five items were preceded with this lead-in statement: "The following questions ask you to describe your work. Please

answer all the questions, ticking the answer which best describes the work you do most of the time"[3]. The five items were as follows:

- (1) Are you required to deal with problems which are difficult to solve?
- (2) Do you have to solve problems which have no obvious correct answer?
- (3) Do you need to use your knowledge of the production process to help prevent problems arising in your job?
- (4) Do the problems you deal with require a thorough knowledge of the production process in your area?
- (5) Do you come across problems in your job you have not met before? (p. 439).

Each question had a five-point response scale with the following alternatives: "not at all, just a little, a moderate amount, quite a lot, and a great deal" (p. 435).

*Computation.* The items appear to be scored from one to five, with "a great deal" scored as five. A score of five represents the maximum problem-solving demand. A total score for the scale is apparently obtained by summing the separate items and dividing by five. Means and standard deviations are presented for 20 different job categories (p. 447)[4]. The mean of the means is 3.15; the mean of the standard deviations is 0.80.

*Validity.* There are three sets of data that are especially relevant for problem-solving demand. Two additional sets of data are available about validity, but these other data mostly apply to the four remaining concepts. First, with the data from the first two studies, Wall *et al.* did a confirmatory factor analysis to see if the five concepts were distinct. Both CFAs indicated five distinct factors. The factor loadings from the first sample for the five items of problem-solving demand are as follows: 0.64, 0.61, 0.63, 0.72, and 0.46. Loadings are not available for the five items for the second sample. Second, Wall and his colleagues next checked to see if the factor loadings for the five concepts were essentially the same for the four samples. For this analysis, two recently added items to assess problem-solving demand were excluded. The results indicate that the factor analyses are largely the same for the five concepts for the four samples. Third, the five scales indicate clear differences in mean scores across the 20 job categories identified. Since these job categories were selected to be different, the five scales were expected to indicate clear differences in mean scores.

*Reliability.* Coefficient alpha for the first sample is 0.76 (p. 446).

*Comments.* This sophisticated measurement research is on a par with the work done in the USA by Blau on commitment and Breaugh on work autonomy; Blau and Breaugh's research was treated previously in the handbook. When the 1972 version of this handbook was published, the only quality measurement work available was the research by Smith *et al.* on the job descriptive index, discussed in the chapter on satisfaction. There has clearly been an improvement in quality organizational measurement research since 1972.

Wall *et al.*'s problem-solving demand seems to capture the essential idea contained in the handbook's routinization. The compatibility between the two

concepts is most apparent when the five questionnaire items are examined. If an employee, for instance, is required by his job to deal with problems which are difficult to solve (the first item), it is likely that the job will not be highly repetitive. Or again, if an employee has to solve job-problems which have no obvious correct answer (the second item), it is likely that the job will not be highly repetitive. A high amount of problem-solving demand, therefore, seems to correspond to a lowly routinized job.

As indicated earlier, Wall *et al.*'s five questionnaire items are very different from the items that Price and Mueller used to assess routinization. Unlike Price and Mueller, Wall *et al.* do not build on the work of Hage and Aiken and Perrow. The only quarrel with Wall *et al.*'s items is that they do not take into account response-set bias. All of the items, for instance, are phrased to indicate high problem-solving demand – or low routinization, to the handbook. This is a minor flaw that can be corrected in future research.

The scoring was not completely clear. It was possible to figure out the scoring, but this responsibility should not be placed on the reader.

The handbook agrees with Wall *et al.* who state that "...the evidence supporting the new scales is convincing..." (p. 453). More work must be done, but Wall *et al.* have made a convincing case for their new scales. The handbook has focused on Wall *et al.*'s measure of problem-solving demand, but the comments made for this concept also apply to timing control, method control, monitoring demand, and production responsibility[5].

*Source.* In addition to Wall *et al.* (1995), also relevant are Wall *et al.* (1990) and Jackson *et al.* (1993).

## **Standardization**

### *Definition*

Standardization is the degree of uniformity regarding procedures and material[6]. Behavioural scientists usually focus on uniformity of procedures, whereas engineers typically emphasize uniformity of materials. The acronym SOP (standard operating procedures) is widely encountered in organizational research and illustrates a concern with uniformity of procedures. Material about "interchangeability" in historical discussions – of the cotton gin, for instance – illustrates a concern with uniformity of materials. Standardization was a significant component of the scientific management movement at the turn of the century in the USA (Aitken, 1960; Wrege and Greenwood, 1991).

Standardization is another way of describing an organization's process of transforming inputs into outputs, that is, its technology. An organization's technology can be characterized by degrees of complexity, interdependence, mechanization, routinization, and standardization. These five ways of characterizing the organization's transformation process illustrate dimensions of technology. The five concepts refer to different domains within the more general concept of technology.

It is important to distinguish standardization from formalization and routinization. First consider formalization. Organizations, especially the larger

ones, typically standardize their rules and regulations in written material, such as rule books and policy manuals. Standardization and formalization thus often coincide. However, rules and regulations, especially in smaller organizations, may not be embodied in written documents, but exist only as informal understandings. In short, standardization is not always implemented by written documents. Next consider routinization. A great many highly standardized jobs are also highly routinized. Most jobs on automobile assembly lines would be examples of highly standardized and routinized jobs. It is possible, however, for jobs to be highly standardized yet quite non-routinized. A job may, for instance, consist of a series of different but highly standardized tasks. When the different tasks are part of the same job, the result is a job that is quite non-routinized. The work of many employees – laboratory and X-ray technicians in hospitals would be illustrations – is often highly standardized in its component tasks but quite non-routinized when viewed as a unit. Although they probably covary most of the time, standardization must not be confused with routinization.

*Measurement*

The 1986 version of this handbook used Withey *et al.* (1983) as the measurement selection for routinization and standardization. This version of the handbook, however, only uses Withey *et al.* as the selection for standardization.

The handbook's review of the measurement literature has located three questionnaire items that, though not generally intended to measure standardization, appear to do so, from the handbook's perspective. The final sections on additional measurement suggestions list and discuss these three questionnaire items. With some revisions, these three items might be combined into a scale to measure standardization – at least this is the hope.

*Withey et al. (1983)*

*Description.* The purpose of this research was to provide a systematic comparison and improvement of six measures of work-unit technology[7]. All of the measures examined use Perrow's (1967; 1970) widely cited research on technology. A sample of 23 work units was drawn from a large Canadian government agency. The work units were selected in such a manner that their technology was basically homogeneous within the units and the different aspects of Perrow's concept of technology were represented. The questionnaires used to collect the data were completed by 23 supervisors and 169 workers.

*Definition.* The handbook's concern is with "analysability", an aspect of Perrow's concept of technology (1967; 1970). If technology is defined as the conversion of input into output (Withey *et al.*, 1983, p. 46), then analysability exists when the work "can be reduced to mechanical steps" and "participants can follow an objective procedure to solve problems" (p. 46). Withey *et al.*, it should be stressed, do not refer to "standardization".

*Data collection*[8]. Analysability was measured by five questionnaire items. The first question was preceded by the introductory statement: "The following questions pertain to the normal, usual, day-to-day pattern of work carried out

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by yourself and the people in your work-unit. Please circle the appropriate answers". The first question was: "To what extent is there a clearly known way to do the major types of work you normally encounter?"

The following introductory statement preceded the second, third, fourth, and fifth questions: "This part includes more questions about the nature of your normal, day-to-day work activities. Please circle the appropriate answer to each of the following questions". The second to the fifth questions were as follows:

- (2) To what extent is there a clearly defined body of knowledge or subject matter which can guide you in doing your work?
- (3) To what extent is there an understandable sequence of steps that can be followed in doing your work?
- (4) To what extent do you actually rely on established procedures and practices?
- (5) To what extent is there an understandable sequence of steps that can be followed in carrying out your work?

The responses were the same for all five questions. Each question has seven numbers (1-7), displayed horizontally. One number was to be circled for each response. There were three phrases above the seven numbers: "to a small extent, to some extent, and to a great extent". The first phrase was above the one, the second was above the four, and the third was above the seven.

*Computation.* Scores of one and seven signify low and high amounts of analysability respectively. An individual's score was obtained by summing the scores for the five questions; the score for a work unit was obtained by summing the scores of its individual members and dividing by the number of members.

Descriptive statistics are not provided for the 23 work units studied. Means, however, are provided (p. 60) for four units: computer operations (2.3), methodology (4.4), training package (3.2) and systems analysis (2.7).

*Validity.* Five sets of data are pertinent to the assessment of validity. First, a confirmatory factor analysis yielded a factor that is clearly interpretable as "analysability". The average loading for the five items on the factor is 0.66 (p. 59). Second, a correlation of 0.58 is obtained (p. 59) between the analysability scale and the task variety measure of the job characteristics inventory (Sims *et al.*, 1976). Low discriminant validity is indicated because the correlation should have been lower, given that task variety is not the same concept as analysability. Third, both the workers and supervisors described the technology of the work units. Agreement between these two categories of employees is a low 0.21, demonstrating little convergent validity (p. 59). Fourth, the analysability scale is in substantial agreement (0.85) with the six original measures examined, demonstrating high convergent validity (p. 59). Fifth, the scores for analysability were compared with the descriptions of technology provided by two external raters (p. 59), both of whom were professors who had experience in teaching and research with Perrow's work. There is considerable agreement (0.49)

between the workers and the external raters (p. 59). Based on these data, Withey *et al.* believe that the measure of analysability displays "reasonable psychometric properties (p. 61).

*Reliability.* The Cronbach alpha for the new measure of analysability is 0.85 (p. 59).

*Comments.* What is most debatable is the handbook's use of the scale of analysability to measure standardization. This use is the handbook's only concern in these comments. Withey *et al.*, let it be noted again, do not use the label of "standardization" in the report of their research. They explicitly label their concept "analysability" and base it on Perrow's work.

The handbook has had considerable difficulty finding a scale of standardization that meets the selection criteria outlined in the introductory chapter. The handbook suggests that the new scale Withey *et al.* developed for analysability is a measure of standardization. Withey's questions will now be examined with the handbook's view of standardization. The handbook suggests that an organization with a highly uniform set of operating procedures will be one where "there is a clearly known way to do" most work; where "there is a clearly defined body of knowledge" to guide the work; where there is "an understandable sequence of steps" that can be followed in doing the work; and where considerable reliance can be placed on "established procedures and practices" in performing the work. In short, the questions Withey *et al.* developed actually assess standardization, as traditionally defined. Finally, since standardization as a label has a much longer history than analysability, the handbook's preference is for standardization.

*Source.* Withey *et al.* (1983).

### **Additional measurement suggestions**

The three questions in this section, with the exception of the second, were not intended as measures of standardization. Role ambiguity is the intended concept for the first question, whereas the second question is part of a scale intended to measure standardization. Structuring of work attitudes is the focus for the third question.

The first question is as follows: "On my job, whatever situation arises, there are procedures for handling it" (Beehr, 1976, p. 36). Four response categories were used: "very true, somewhat true, a little true, and not true at all". "Very true" should be scored as four and "not true at all" should be scored as one.

The second question asks: "To what extent did you follow *standard operating procedures* or practices to do your major tasks the past three months?" (Van de Ven and Ferry, 1980, p. 162). Five responses were used for this question: "to no extent, little extent, some extent, great extent, and very great extent". "To no extent" should be scored as one and "very great extent" should be scored as five.

The third question is: "Whatever situation rises, we have procedures to deal with it" (Zeitiz, 1983, p. 1104). "Agree" and "disagree" are the responses used for this question and should be scored as two and one respectively.



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The handbook has three suggestions regarding construction of a standardization scale with these three questions. First, a fifth response should be added to the first question, to keep its weight in the scale equal to the weights given the other two questions. Second, no reason is apparent for using “the past three months” in the second question. The past three months could have been an unusual period for the respondents. The question could perhaps be modified in the following manner: “To what extent do you generally follow standard operating procedures as you do your major tasks?” Third, the dichotomous format of the third question should be changed to the five-part Likert format of the first two questions, with “strongly agree” scored as five and “strongly disagree” as one.

### **Technical complexity**

#### *Definition*

Technical complexity is the extent to which the transformation process is continuous[9]. The work of a highly skilled wood carver is very low in continuity, since it is characterized by many interruptions. Production of steel in large batches has more continuity than does the production of woodcarvings, but still has a number of interruptions as the batches of material are prepared. Mass production of automobiles has more continuity than the use of large batches in producing steel, but mass production still experiences interruptions as the product being transformed moves down the line. Finally, the refining of crude oil into gasoline is an example of a transformation process in which continuity is maximized. Literature about technical complexity is also found in discussions of continuous flow, progressive assembly, and flow process.

The use of “complexity” in the label for this concept is unfortunate, since the same term is used to refer to another domain of technology. However, it is difficult to change usage in the field, so the label is retained. Technical complexity was not included in the 1986 version of the handbook.

#### *Measurement*

McKinley’s (1987) measure of technical complexity is used as the measurement selection. His research is based on the work of Woodward (1958; 1965) and is part of Blau’s research on technology (1976) during the 1970s[10]. The handbook’s label of technical complexity comes from McKinley.

#### *McKinley (1987)*

*Description.* McKinley’s research was previously used in the chapter on administrative intensity and the descriptive material need not be repeated. As previously indicated, the concern at this point is with McKinley’s material about technical complexity.

*Definition.* McKinley defines technical complexity as the degree of “...technical sophistication and degree of predictability of a production system” (p. 88). As previously noted, McKinley’s concept is based on the work of Woodward (1958; 1965).

*Data collection*[11]. The interviewing team doing the research made a judgement concerning the extent to which a plant's overall manufacturing process was technically sophisticated and predictable. Eight categories of sophistication and predictability were used in making this judgement:

- (1) *Simple units*: basically single pieces, not assemblies, produced one by one, e.g. candlesticks, some pottery, handknitted garments.
- (2) *Complex units*: assemblies produced one by one, e.g. couture dress.
- (3) *Fabrication*: different work people come to the unit of output (which moves infrequently) instead of the unit moving to different work people, e.g. railway wagons.
- (4) *Small batches*: the equipment is re-set every week or more often for outputs measured in items, e.g. lipsticks.
- (5) *Large batches*: the equipment is re-set at intervals of longer than a week for outputs measured in items, *but* the items are assembled diversely, i.e. a variety of sequences, including assembly by complex unit or small methods, e.g. utility furniture.
- (6) *Large batches with large batch assembly*: the equipment is re-set at intervals of longer than a week for outputs measured in items and the assembly is by large batch methods, e.g. chocolates.
- (7) *Mass production*: where batch size, measured in items, is indefinite, i.e. a change of batch requires a decision in (a) design modification, (b) retooling, which are beyond the normal authority of the line production management, e.g. motor cars.
- (8) *Process production*: throughputs measured by volume, e.g. fertilizers.

*Computation*. The scoring ranges from one to seven. "Simple and complex units" were combined and assigned a score of one. "Process production" was scored as seven. Each plant in the sample received a single score. The higher the score, the more continuous is the transformation process. For the sample of 110 plants, the mean is 4.89 and the standard deviation is 1.56.

*Validity*. The data summarized for the chapter on administrative intensity are also pertinent to technical complexity's validity. As hypothesized, the results indicate that the positive relationship between technical complexity and administrative intensity is contingent on whether the organization is growing or declining. The results, therefore, provide confirmation of construct validity.

*Reliability*. No information is supplied about reliability.

*Comment*. McKinley's "technical sophistication and degree of predictability" appears to be assessing the same phenomenon as the handbook's "extent to which the transformation process is continuous". The conceptual similarity is especially apparent when one examines the measurement information provided to the interviewing team. "Simple and complex units" exhibit less continuous transformation than "process production". McKinley's terminology is different from the handbook's, but the concept involved appears to be essentially the

same. The handbook's "continuous transformation" is more precise than McKinley's "technical sophistication and degree of predictability". Sophistication and predictability could refer to two different ideas; it is clearer to refer only to continuous production.

McKinley's measure of technical complexity depends on the assessment provided by the interviewing team. The usual procedure is to allow knowledgeable individuals within the organization to assess technology. An example of the customary procedure is Lincoln and Kalleberg's (1990) collection of data to measure mechanization. It is not clear which approach to use. The handbook prefers the Lincoln and Kalleberg approach, with the proviso that two or more knowledgeable individuals be used to make the assessment.

*Source.* McKinley (1987).

#### Notes

1. The handbook has benefited from the work on routinization by Hage and Aiken (1967; 1969; 1970) and Perrow (1967; 1970). The 1972 edition of this handbook, for example, used the Hage and Aiken (1969) measure of routinization. Perrow's work has been a major influence in the study of routinization. Hage and Aiken, for instance, based their research on Perrow's work.
2. The handbook thanks Professor Jackson for a copy of his questionnaire.
3. The questionnaire also had the following phrase after the instructions: "to what extent". This phrase has been eliminated in the handbook, because it complicates the description without adding much information. "Ticking" in the lead-in statement is a British word that corresponds to "checking" in the USA.
4. These means and standard deviations were based on a three-item measure of problem-solving demand developed for an earlier study (Jackson *et al.*, 1993). The three-item and five-item measures of problem-solving demand yield similar scores.
5. Wall *et al.*'s timing and method control seem to be very similar to the concept of work autonomy as used by Breugh (1985) and discussed in the chapter on power. Monitoring demand and production responsibility correspond to no concept in the handbook, that is, they are new concepts. The handbook makes no attempt to include all the concepts used by organizational scholars, only the most widely used ones.
6. This definition is based on Pugh *et al.* (1968; 1969). Hounshell (1984) provides a history of standardization in the USA.
7. The six measures are as follows: Daft and Macintosh (1981), Glisson (1978), Hage and Aiken (1969), Lynch (1974), Van de Ven and Delbecq (1974), and Van de Ven and Ferry (1980).
8. Information about the questionnaire items in this section were provided by Professors Withey and Daft. The questions in the paragraph come from the data provided by Professors Withey and Daft.
9. This definition is based on McKinley (1987).
10. Two additional studies which used this data are Collins and Hall (1986) and Collins *et al.* (1988).
11. The handbook thanks Professor McKinley for providing measurement material for this section.

## 29. Turnover

### Definition

Turnover is the degree of individual movement across the membership boundary of an organization. The individuals involved are employees, and the movement can be either into (accessions) or out of (separations) the organization. Most research on turnover examines separations, and this is the focus of the handbook. In Chapter 10 on the environment, the handbook indicated that it considers the members of an organization to be the individuals who are legitimately subject to the organization's norms and sanctions. Literature dealing with separations from an organization is often found under the labels of quits, attrition, exits, mobility, migration, and succession.

Voluntary and involuntary turnover are commonly distinguished. Turnover initiated by an individual is voluntary turnover. "Quits" is probably the most frequent designation for voluntary turnover. Involuntary turnover is movement not initiated by the individual; examples are dismissals, layoffs, and deaths. Research on turnover generally examines voluntary movement, and this is the focus of the handbook.

### Measurement

There are many measures of turnover, most of which are seldom used, and there is little reason to cite them all[1]. What will be done is to recommend two measures that the handbook believes are appropriate for organizational scholars to use. Finally, the handbook's author will offer some comments regarding his experience collecting data about voluntary turnover from organizations. Most turnover data are collected from records, but there are problems with this procedure. Although the handbook wants to encourage greater use of organizational records for measurement, these records must be used critically. The handbook's comments will attempt to promote a critical use of records in the measurement of turnover.

The two measures recommended are the "quit rate" and the "median length of service of voluntary leavers". These two measures will be described, criticized, and compared.

#### *Quit rate*

The quit rate is computed in the following manner:

$$\frac{\text{Number of employees who leave voluntarily during the period}}{\text{Average number of employees during the period}}$$

Consider first the numerator. Voluntary turnover has been discussed and requires no further elaboration. The period of time for the computation varies; the usual period is one year. Turning next to the denominator, the average

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number of employees can be computed in different ways. If the quit rate is to be computed for a year, and if there is a large fluctuation in the number of employees during the period, then the average number of employees on the 15th day of each month can be used. If there is little fluctuation in the number of employees, the average for a year can be computed by adding the employees as of 1 January to the employees as of 31 December and dividing by two. The average can, of course, be computed in other ways.

There are three advantages to the quit rate. First, it is relatively easy to compute. It takes some care to obtain a list of voluntary leavers; the task, however, is manageable, as will be indicated at the end of this section. It is generally no major problem to obtain, with one procedure or another, the average number of employees during a period of time. Second, the rate is readily understandable. Understanding is enhanced by the common use of percentages, with a high percentage indicating high turnover. A 50 per cent quit rate (really a 0.50 rate) is higher than a 25 per cent rate (a 0.25 rate). Third, the rate is widely used. Wide use means that data are available for comparison. An organization's quit rate is interpreted most meaningfully when compared with the rates of similar organizations.

The quit rate also has two disadvantages. First, the rate has no precise meaning. A quit rate of 100 per cent for a year could mean that all of the employees turn over once during the year; that half the employees turn over twice, while the other half remained stable; that a quarter turned four times, and so on. These different ways of yielding 100 per cent have very different implications for the organization. For example, effectiveness may be more adversely influenced if all of the employees turn over than when employees from one set of positions turn over four times. Second, the quit rate is misleading because it does not control for variables related to turnover. The most important uncontrolled variable is length of service. If an organization is increasing in size, it will be characterized by a high quit rate, because of the higher turnover rate of its newly hired employees. This high quit rate will exist even if the organization experiences very little turnover of experienced employees. Organizations with high quit rates are usually thought to have relatively low effectiveness, because of the basically negative impact that turnover is believed to have on effectiveness. Organizations that are increasing in size, however, are often responding to increased demand for their output, which in the long run probably portends increased effectiveness. The quit rate is especially misleading when the size of an organization is increasing.

#### *Median length of service*[2]

The median length of service of voluntary leavers is not used very often. This measure, it must be stressed, only focuses on *leavers*. Another common measure of turnover computes an average length of service for all employees currently in the organization, focusing on stayers rather than leavers. Since there are often wide variations in the lengths of service among the voluntary leavers, this measure uses the median to represent the central tendency more accurately. The

average that focuses on stayers typically uses the arithmetic mean to represent the central tendency.

There are three advantages of the median length of service of voluntary leavers. First, this average is relatively easy to compute. Comparison of the list of employees at two times will indicate the leavers during the period. The voluntary leavers must then be selected from the list. However, resource management officers typically keep records of when each employee started working for the organization, and with this information the median length of service of the voluntary leavers can be computed. Using the median rather than the arithmetic mean does not create any serious difficulty in the computation. Second, the median length of service of voluntary leavers is readily understandable. It is, however, sometimes confused with the arithmetic mean based on the stayers rather than the leavers. Third, the average indicates which employees, by length of service, are leaving the organization. An organization that is losing its experienced employees will be in a very different situation with respect to effectiveness, for example, than an organization that is losing its inexperienced employees. If experienced employees are leaving voluntarily, then the average will be higher than if inexperienced employees are leaving. The utility of the average is enhanced by its ability to indicate which employees are leaving the organization.

The median length of service of voluntary leavers has two disadvantages. First, it is relatively difficult to obtain an adequate sample size for computation of the average, because the measure is based only on the voluntary leavers during a specific period. It takes a fairly large unit to have a sufficient number of voluntary leavers to yield a stable statistic. As a result, the average is mostly restricted to fairly large units, either organizations or subsystems within organizations. Second, since the average indicates which employees, by length of service, are leaving the organization, it does not indicate how much voluntary turnover characterizes the organization. The volume of voluntary turnover that characterizes an organization is important, because of the costs that this turnover creates for the organization; the greater the turnover, the greater the costs. Because of these costs, it is important to know how much turnover is taking place in an organization. The utility of the average is lessened by its inability to indicate the volume of turnover.

The quit rate and the median length of service of voluntary leavers complement each other very well. It is important for organizations to know both how much voluntary turnover they are experiencing and which employees are leaving. The quit rate indicates volume and the median indicates who is leaving (by length of service); each measure thus supplies an important piece of information. The recommendation is that organizations use the two measures to assess voluntary turnover.

#### *Data collection*

The author of the handbook will now indicate, based mostly on his experience, some problems in collecting data about voluntary turnover from organizations.

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The size of the organization makes a major difference in collecting these data, and the handbook will be sensitive to this difference in the following discussion. Generally, it seems to be easier to collect valid and reliable data about voluntary turnover in smaller organizations.

The handbook mostly collects data by using records and interviewing key employees, but since records are so important in this type of data collection, these procedures are often labelled as “based on records”. Large and small organizations typically have individuals responsible for “human resources management”, who are usually the key individuals in data collection. The following discussion assumes the existence of human resource management officers. Identification of the leavers will be the first focus, and then determination of those who leave voluntarily will be examined.

The handbook generally uses payroll records to determine leaving or staying. The names on the records at one point in time are compared with the names at a second point in time. If a name that was present at the first point is missing at the second point, then the employee is considered to be a leaver. Employees whose names are on the records at two consecutive times are, of course, considered stayers.

Payroll records have two advantages for researchers. Nearly all organizations have such records, which are now mostly produced by computers, and organizations strive to maintain accurate records. These advantages are what prompt the handbook to use these records to determine leaving or staying. Other records, such as various types of personnel rosters, have been considered but the handbook always comes back to payroll records because of their advantages.

There are, however, five problems with payroll records. First, since members of governing boards (such as directors, trustees, and commissioners) generally receive some money from the organization, their names often appear on payroll records. Members of governing boards are not usually considered to be employees of the organization, since they represent the interests of a constituency outside the organization and promulgate most of the norms that employees are expected to follow. Therefore, the staying or leaving of board members should not enter into the computation of turnover statistics; their names must be removed.

Second, women who marry often change their names, leading to the possibility of counting an individual as a leaver who has merely changed her name as a leaver. Researchers have to request this information specifically from the human resource officers, since these officers merely change the records when notified of a marriage. There is usually a record somewhere requesting the change in name. It is easier to obtain this information about changes in names due to marriage in smaller organizations, since the human resource officers in these situations have available more non-work information about the employees than in larger organizations.

Third, some employees quit and are rehired between the two points of comparison. This is not usually a serious problem, since there are not too many

of these employees, but researchers should be aware of the possibility. When the handbook can locate these individuals, and this is usually in the smaller organizations, they are counted as stayers.

Fourth, individuals who go on "leaves of absence" sometimes pose a problem. The most common example of this type of individual is a woman who is pregnant. These individuals are not paid by the organization, and their participation in its operation is minimal. The handbook considers these individuals to be members of the organization, however, since they are still officially subject to organizational sanctions – they still can be fired, for example. These individuals also will soon resume full participation in the organization's operations. Since the names of these individuals who are on leave continue to appear on the payroll records (although they usually receive no money from the organization), the handbook has few problems with the classification. A problem would arise if these individuals were to be removed from the payroll records. The treatment of such individuals, with respect to the payroll records, should always be checked.

Fifth, the payroll records will often contain the names of temporary employees. Some of these temporary employees work only a few days a month, but others work longer. Temporary employees are increasing in number, so procedures must be worked out to deal with them in the measurement of turnover. These employees are members of the organization, because they are subject to its norms and sanctions. However, the handbook does not include them in the measurement of turnover, since they intend to leave the organization in the near future. The measurement of turnover is usually restricted to the organization's permanent labour force. Resource management officers can identify the temporary employees and their names should be removed from the calculation of turnover statistics.

After the leavers have been identified, the voluntary leavers must be located. This location is mostly a matter of excluding the relatively small numbers of involuntary leavers. The handbook has consistently encountered four problems in separating out the involuntary leavers.

First, there is always some difficulty with dismissals, which are, of course, involuntary turnover. Some employees "resign" under pressure and are, in effect, dismissed. Interviews are usually required to establish the fact of dismissal. In small organizations, dismissals are commonly known to the human resource officers, and the names can readily be obtained if sufficient rapport has been established by the researcher with the human resource officers. In larger organizations, the human resource officers must usually rely on forms that indicate dismissal, and it is difficult to interview all the first-line supervisors, who know the most about the dismissals. It is thus very difficult to locate all the dismissals in a large organization. About the best that a researcher can do in a large organization is to work with several human resource officers, trying to find officers who have a significant level of informal interaction throughout the system and who have been employed a long time.



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Second, a decision must be made as to whether employees who resign because of pregnancy are to be considered as voluntary or involuntary turnover. The handbook considers resignation due to pregnancy to be voluntary turnover. Many women in contemporary organizations become pregnant, give birth, take very brief leaves of absence, and then return to work. If a woman gives birth and resigns her job, she is explicitly or implicitly making a decision to give priority to the kinship role rather than to the occupational role. The handbook thus sees no reason to classify resignation due to pregnancy as involuntary turnover.

Third, retirements have to be treated differently than in the past. Historically, most individuals who retired did so because of organizational rules mandating retirement at a specific age. Such retirement was properly classified as involuntary turnover. The current situation is different, however. Employees now cannot legally be forced to retire (Beehr, 1986), so retirements must be now classified as voluntary turnover. Human resource officers will know which employees have retired.

Fourth, a few individuals always resign for "health reasons". Where serious medical problems exist, these individuals are classified as involuntary turnover. Researchers must probe, however, to obtain information about these health reasons. Some of these individuals are clearly incapacitated and can no longer work; as such, they are instances of involuntary turnover. Other individuals, however, are perfectly healthy and use the health label to leave with a legitimate reason for a job they want elsewhere. In the handbook's experience, it is easier to obtain information about the individuals who resign for health reasons from smaller organizations. In large organizations, these individuals seem to disappear, and it is difficult to find people who know about them.

#### Notes

1. Information in this chapter is mostly based on Price's codification of the measurement literature about turnover (1977, pp. 11-23) and experience in conducting two empirical studies of turnover (Price and Mueller, 1981; 1986). Excellent general reviews of the turnover literature are provided by Hom and Griffeth (1995) and Mobley (1982). The Hom and Griffeth's review is especially comprehensive.
2. This measure is mostly associated with the work of Van der Merwe and Miller (1971; 1973; 1976).

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## 30. Conclusion

The concluding chapter offers some reflections on organizational measurement since 1967, makes a suggestion for future research on measurement, and advances an administrative suggestion that might facilitate measurement research.

### Reflections on organizational measurement since 1967

The handbook has four reflections regarding organizational measurement since 1967, the date when the author began work on the first measurement handbook (Price, 1972b). First, it is interesting to note that only three measures from the 1972 version of the handbook are used in the current revision. The three measures are the Georgopoulos and Mann measure of co-ordination and two measures of satisfaction, Brayfield and Rothe and Smith, Kendall and Hulin. A number of interpretations could be advanced to explain the continued use of these three measures.

What seems to have happened prior to 1972 is that organizational scholars advanced measures without careful development. Smith, Kendall and Hulin's job descriptive index may have survived because it was the result of careful development. Georgopoulos and Mann's co-ordination scale comes from the Survey Research Center of the University of Michigan, where more measurement research is conducted than anywhere else in the USA. Brayfield and Rothe's scale may have survived because there were few global measures of satisfaction in the literature. It will be interesting to see what happens to the Brayfield and Rothe measure now that Smith and her colleagues have developed a global measure of satisfaction.

Second, a sizeable amount of quality measurement research has appeared since 1967. This measurement research has been noted and applauded throughout the handbook. Smith and her colleagues have continued to refine the job descriptive index and excellent work has been done by Blau, Breagh, Pierce and Dunham (1978), Schriesheim, and Wall – to mention some of the scholars who have done organizational measurement research. The handbook hopes that these scholars will continue this research and that others will join them. Many scholars do a single measurement study and then move on to other projects.

Third, the use of the questionnaire as *the* instrument of data collection is overwhelming. Nearly all of the measures in the handbook are based on data collected by questionnaire. A few measures are based on interviews and records, whereas none are based on observational data. This reliance on the questionnaire is worrisome. It is risky for organizational knowledge to be based almost exclusively on a single means of data collection. If, for instance, a major methodological flaw is noted in the use of questionnaires, the foundation will be removed from much organizational knowledge. A major opportunity exists for the development of records-based data collection, an opportunity that the Aston Group sought to exploit in the 1960s but which contemporary researchers have

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not followed up. Greater use of telephone interviews also seems to be promising. Kalleberg *et al.* (1996) have begun to exploit telephone interviews.

Fourth, quality measurement research on organizations is most consistently performed by social psychologically oriented scholars. These scholars may be located in one of the disciplines in a university – often the Department of Psychology – or be a member of a department in an applied area, often the College of Business. Sociologists often do very good measurement research – a major example is the NOS by Kalleberg *et al.* (1996) – but their work is typically uneven. What is especially noteworthy is the total absence of quality measurement research by economists. Economists commonly examine the concepts included in the handbook, but they do little primary data collection. Most of their analysis is based on data collected by others, especially the Federal Government. Political scientists do a sizeable amount of organizational research, but they do very little quality measurement research. The importance of quality measurement research by social psychologically oriented scholars is best illustrated by the handbook's frequent use of the *Journal of Applied Psychology* – probably the major journal for social psychologists interested in organizations.

#### **Recommendation for future measurement research**

The handbook recommends greater specialization in measurement research. The meaning of this specialization will be elaborated.

Two different role models are available regarding the recommended specialization. The first model is that of Smith *et al.* (1969), who developed the widely-used job descriptive index (JDI) to measure satisfaction. Smith *et al.* sought only to develop a measure of satisfaction; they did not seek to develop and estimate theoretical models regarding either the determinants or impacts of satisfaction[1]. Development work extended over a period of ten years, through four major studies. A total of 2,662 subjects were used in the studies. Several scoring methods were tested, and the most successful – weighted direct scoring – was retained. Using different measurement correlations, cluster analysis, and various factor analyses, Smith *et al.* carefully assessed discriminant and convergent validity for the JDI. Reliability was assessed by checks for internal consistency and by test-retest procedures. The second role model available for specialization is that of Van de Ven and Ferry (1980), who developed the organizational assessment instrument (OAI). Van de Ven and Ferry had both measurement and substantive concerns. They developed a large collection of instruments (the OAI) designed to assess the characteristics of the context, structure, behaviour of the organization, the work group, and specific jobs. Their research also sought to explain, as their substantive concern, organizational effectiveness. Three versions of the OAI were tested within a large ( $N = 1,700$ ) organization over seven years. Intrinsic and extrinsic validity were demonstrated for each of the measures in the five modular parts of the OAI. Parts of the OAI were also tested in a second organization, and either the whole or selected sections were tested in eight other studies done by different researchers.

Smith *et al.* and Van de Ven and Ferry represent considerable specialization in measurement. Few scholars have specialized in measurement as much as these individuals. The handbook suggests a strategy somewhere between Smith *et al.* and Van de Ven and Ferry, being a little closer to the former than to the latter. The handbook is awed by what Smith *et al.* have done, but most scholars will probably not specialize this intensively. This form of specialization is probably an unrealistic alternative; for most scholars, too much time and effort were invested in a single concept. The handbook also stands in awe of the effort by Van de Ven and Ferry. It is very difficult, however, to study a substantive topic, such as effectiveness, and simultaneously develop a set of different measures. Investigation of a substantive topic typically requires a different type of research design than investigation of a measurement topic. Substantive topics, to be studied successfully, generally demand homogeneity in sample and sites to control for extraneous variables, whereas measurement topics, to be studied successfully, usually demand heterogeneous samples and sites to develop measures that can be widely used. Given the current level of knowledge in the study of organizations, it is most difficult to master the literature sufficiently to develop a set of different measures. In the handbook's view, scholars should specialize for a few years in the development of measures for one or two concepts; substantive concerns definitely should not be combined with measurement research. After this time, the scholars can move on to conduct measurement research on one or two other concepts.

There are three reasons for the recommended specialization. First, measurement research, to be competently performed, requires mastery of a large and ever-expanding body of technical knowledge about statistics and methodology. The ordinary researcher cannot hope to master this knowledge. Second, substantive knowledge about the topics to be investigated, such as satisfaction for Smith *et al.* is also large and growing. This literature must be mastered to perform competent substantive research. Third, as indicated in the preceding paragraph, the design for the investigation of substantive topics is generally quite different from the design for the investigation of measurement topics. Joint research projects, involving perhaps two or three investigators, are a feasible way to implement the recommended strategy. Some scholars can specialize in substantive topics, whereas others can specialize in statistics and methodology. All scholars involved in such work, however, should focus only on measurement. Implementation of the recommended strategy should result in more JDIs early in the next century.

The handbook recognizes that the specialization recommended does not constitute a total measurement strategy. Other strategic elements must be attended to: selection of samples/sites, which concepts to research, investigation of major measurement issues, and so forth. The handbook's belief is that a total measurement strategy should have as one of its elements a greater degree of specialization than has heretofore existed, and the handbook has sought to indicate the form that specialization should take.

The handbook also recognizes that the recommended specialization will not come about without rewards. Substantive work, such as building theoretical models, has generally been more highly rewarded in academia than

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measurement work. Throughout the handbook the author has sought to recognize a number of outstanding measurement projects currently existing in the field of organizational studies.

### **An administrative suggestion**

Throughout this handbook instances have been noted in which research reports were incomplete. The most common omission was failure to publish the instruments of data collection. Typically, only illustrative fragments of the instrument are presented in the reports. Also often omitted were correlation matrices, detailed information about the results of factor analysis, and descriptive statistics (means and standard deviations) for the measures. This incompleteness is important because it makes replication impossible, and without replication, theoretical models cannot be constructed and tested efficiently. These omissions nearly always result from the desires of journal editors to publish as much quality research as possible within severe space limitations. In brief, there are no villains, but necessary data are not being published.

An often-recommended solution to this dilemma is for the reader to obtain the necessary documentation from the researchers. Researchers often indicate that they will supply the needed documentation, and most articles bear addresses to contact at least one of the researchers. This seemingly simple solution does not work much of the time. Sometimes the promised documentation is forthcoming within a reasonable period and the research can proceed. Such responses are deeply appreciated. More often, however, the documentation is not forthcoming. Researchers do not always respond to requests: they move and mail is not forwarded, go on leave and resent intrusions into their time, begin new projects and file away the requested documentation, respond but not with exactly what was requested, and die or become seriously ill. Another way must be found to make the necessary information available.

The first suggestion is that researchers make a habit of reporting descriptive statistics about measures. This includes the means and standard deviations, as well as validity and reliability data. As just discussed, it is unlikely that journal editors will allow a complete description of scale construction, but the basic descriptive data do not take up much space and should routinely be presented.

The handbook's major suggestion is that researchers deposit critical documentation with a highly respected and stable social-science research organization, such as the Survey Research Center (University of Michigan) or The National Opinion Research Center (University of Chicago). To defray the administrative costs of the research organization, users should be required to pay a fee to obtain the needed documentation. No charge should be assessed for the researcher who submits documentation to the research organization. The handbook suggests, in short, a bureaucratic solution to the dilemma – a natural solution for an organizational scholar!

### **Note**

1. Smith *et al.* also sought to develop a measure of satisfaction with retirement.

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