MANAGING STRESS THROUGH PHRM PRACTICES:

AN UNCERTAINTY INTERPRETATION

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INTRODUCTION

Stress in organizations is a rapidly growing concern to organizational researchers and management practitioners because of its relationship with a magnitude of costly individual and organizational symptoms (Kaplan, 1983; Schuler, 1980a; McLean, 1979; Quick & Quick, 1984; Beehr & Bhagat, 1985). Associated with this rapid growth is the tendency for many, and in some cases, almost all, traditional organizational phenomena to be labeled as stressors or stressful. In addition, traditional organizational outcomes (e.g., lower satisfaction and performance) are being viewed as symptoms of stress. Nevertheless, not all aspects of organizations are stressors, although they have the potential to be so, nor are lower satisfaction and performance the only stress symptoms which should be of concern to researchers and practitioners.

It is partly because stress is so costly that academics and practitioners are focusing their efforts on dealing with job and organizational stress (e.g., by determining potential stressors in organizations and developing strategies that organizations and individuals can use to manage or reduce their stress). Implementing these efforts effectively is not easy when almost every aspect of an

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organization is labeled as stressful or as a stressor. We suggest that the task of stress management can be greatly facilitated by examining stress as a phenomenon that occurs across and within all levels in the organization; at the organization, unit, group, and individual levels of analysis. Consequently in this paper we define and examine stress consistent with this multiple-levels-of-analysis model. In doing this, we provide a selective update of the stress literature and research.' In addition, we discuss in detail how personnel and human resources management (PHRM) practices can be used to manage individual, job, and organizational stress. Our discussion is facilitated by a taxonomy of PHRM practices that is applied to the four levels of analysis. Integrating these four levels of analysis is a definition of stress based on uncertainty.

WHAT IS STRESS?

Stress has been defined in numerous and often inconsistent ways, a state of affairs that has created both confusion and controversy (Mason, 1975). A major source of confusion is the inconsistencies across researchers about *where* stress resides. Is it a characteristic of the environment? Is it an experience felt by the person? Or is it a transactional phenomenon created by the process of the person interacting with the environment? Stress researchers do not agree on the answers to these questions and it is partly for this reason that many have concluded that the concept of stress is no longer useful as a scientific construct. Instead, more precise terms must be used if we are to advance our knowledge of each of the many phenomena that in the past have been lumped together and labeled "stress."

The approach to understanding stress that we take in the present paper is consistent with those who view stress as a phenomenon experienced by the person, rather than as a characteristic of the environment or of the person-environment interaction. Furthermore, we follow McGrath's (1976) emphasis on perceived uncertainty as a key determinant of people's "stress" reactions-both physiological and behavioral-in situations. Although McGrath's formulation of stress as uncertainty is not accepted by all stress researchers, his conceptualization appears to be gaining wide acceptance among organizational scientists. Thus, Schuler (1980a), extending McGrath's work, defined stress as *a perceived dynamic state involving uncertainty about something important.* The dynamic state can be associated with opportunities or constraints. More recently, Beehr and Bhagat (1985) have argued that much stress research can be usefully reformulated and integrated by defining stress to be a function of the uncertainty of outcomes in a situation, the importance of those outcomes, and the duration of the situation. Beehr and Bhagat's argument is made convincing by the fact that several contributors to their edited volume were able to reformulate a variety of topics using an uncertainty framework. These topics include the person-environment fit model of job stress (Van Harrison, 1985), reactions to budget cuts (Jick, 1985), dual-career couples (Gupta & Jenkins, 1985), retirement

(McGoldrick & Cooper, 1985), and the career experiences of minority professionals (Ford, 1985).

Like the authors cited above, we will argue that a better understanding can be gained of many phenomena that have been labeled "stress" by focusing on the more narrow construct of uncertainty. However, it is worth noting here that not all phenomena previously labeled stress can be incorporated into an uncertainty framework. Indeed, the adoption of an uncertainty framework requires limiting one's scope to include only cognitively mediated phenomena. As we will try to show, this apparent narrowing of scope is counterbalanced by a significant gain in our ability to examine phenomena that cut across several levels of analysis (i.e., the individual, the group, the unit, and the organizational levels of analysis). One way to state these trade-offs is to say that a focus on uncertainty facilitates the "vertical" integration of concepts at the expense of the "horizontal" integration of concepts. Vertical integration is particularly important because it allows us to recognize and treat stress as a true organizational phenomenon. Thus, we define stress as uncertainty that occurs at the organizational, unit, group, and individual levels. Uncertainty exists to the extent that knowledge about an event or condition requiring action or resolution is experienced as inadequate.

Recognition that uncertainty occurs at all four levels of organizational analysis implies that strategies for effective management of uncertainty-related stress should specify the target level for treatment. It is suggested here that to help ensure effectiveness, stress management strategies should be explicitly designed to address uncertainty at a particular level of analysis. Furthermore, we argue that such programs should be aimed first at the organization level of analysis. This is because uncertainty, though unique at each of the four levels, does not exist independently across the levels of analysis. Instead, uncertainty flows "down" through the levels of analysis, beginning at the more "macro" levels and continuing its impact to the most "micro" levels. This image is captured in our description of a cascading flow model of uncertainty. How PHRM practices can be used to manage uncertainty-related stress within this framework is described more thoroughly after presenting our model of uncertainty.

MODEL OF UNCERTAINTY

Our model presents uncertainty as flowing interdependently across four levels of analysis, thereby indicating the critical integrative nature of uncertainty in organizations and the need to start intervention strategies at the top.' This model has several components, which are shown in Table 1. These are as follows:

1. *Sources.* These are real entities or objective conditions that generate uncertainty, for example, an organization's suppliers, a unit's technology, a group's task, or an individual's supervisor.

Table 1. Components of a Model of Uncertainty

Levels of Analysis	*Origins of Uncertainty*	*Responses to Uncertainty*
Organization	Environment (e.g., suppliers, clients, competitors, creditors, government agencies, unions)	Strategy (e.g., marketing, personnel, financial production, public relations) Interorganizational structure (e.g., mergers interlocking directorates, joint ventures) Intraorganization design
Unit	Technology (e.g., operations workflow, input, characteristics, knowledge) Organizational politics	Strategy (e.g., bargaining, competition, coalition information) Organizational design (e.g., allocation of authority, coordinating mechanisms, rules)
Group	Interaction patterns (e.g., roles, norms, status, hierarchy, leader behavior)	Cohesiveness Rule enforcement Influence attempts
Individual	Tasks Rewards Roles Job qualities Individual qualities	Psychological states (e.g., satisfaction, perceived threat, anxiety, tension) Physiological symptoms (e.g., heart rate, blood pressure, gastrointestinal disorders) Behavioral reactions (e.g., avoidance, attack) Cognitive information processing (e.g., use of heuristics, biases)
	Dimensions of Uncertainty [a]	
	Number of elements Rate of change Heterogeneity of elements Clarity of elements Relationship among elements Predictability of change	
	Moderators of the Experience and Reactions to Uncertainty	
Relative power Time pressure Importance of issue Individual ability Locus of control		Ambiguity tolerance Field dependence Availability of feedback Task interdependence Group cohesiveness

[a] The dimensions of uncertainty are common to all levels of analysis (i.e., organization, unit, group. individual).

2. *Dimensions.* These describe variations in the nature of information received from, or about, a source. These information characteristics determine the amount of uncertainty experienced.

3. *Responses.* These are reactions to uncertainty that can occur at the four levels of analysis. A particular response is generally unique to one of the four levels of analysis.

4. *Moderators.* These represent characteristics that may be expected to influence the relationship between objective sources of uncertainty and the perceived uncertainty, or the relationship between the felt uncertainty and the responses to it.

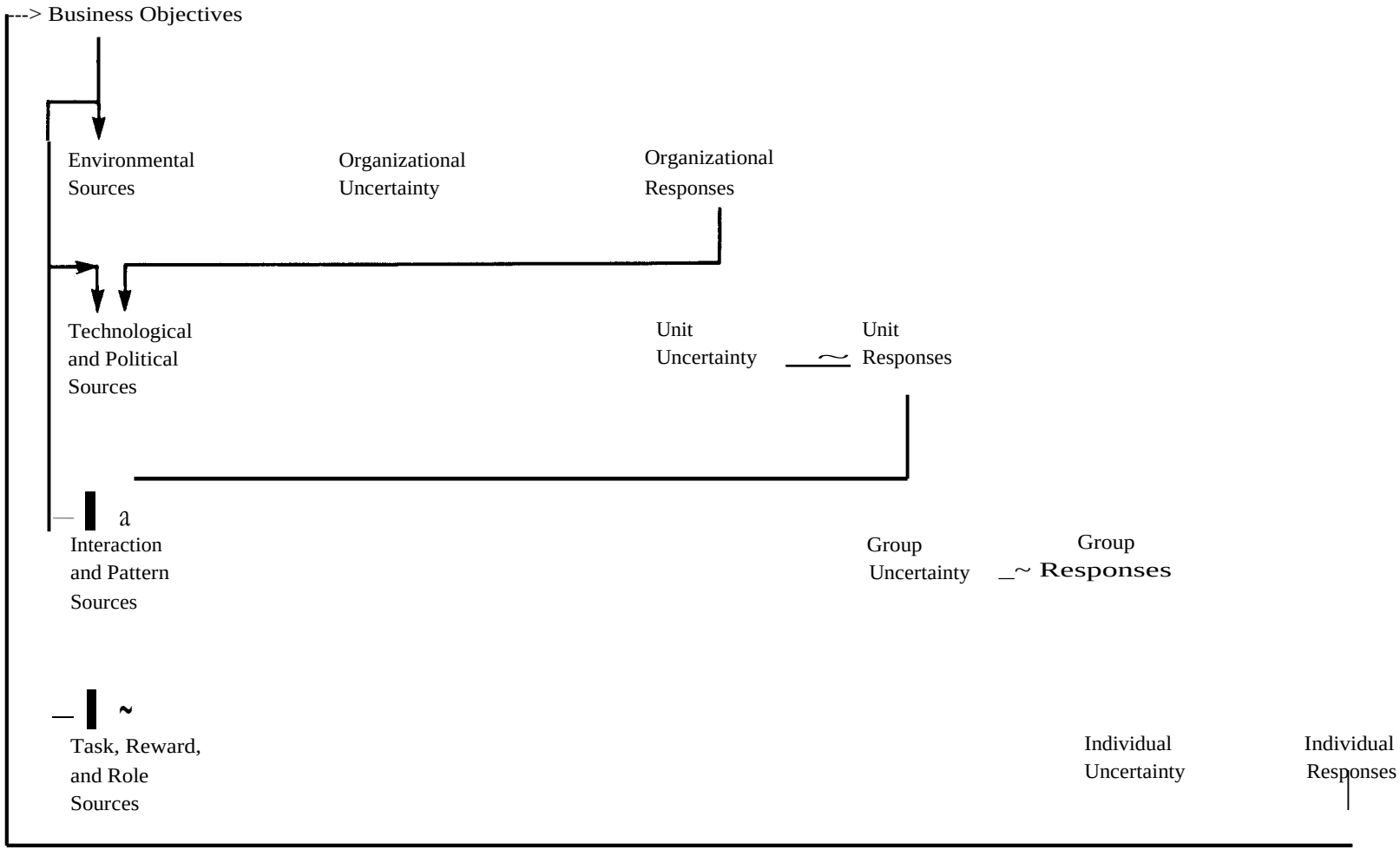
Our conceptualization of uncertainty rests on the premise that uncertainty originates in the environment and flows in an external-to-internal manner across the organization, unit, group, and individual levels. Uncertainty at one level results in responses at the next level which in turn cause additional, albeit qualitatively different, uncertainty. While uncertainty can flow in the opposite direction (i.e., from individual to group to unit to organization levels) and while the sequence need not be transmitted directly from one level to the next contiguous one, our suggestion is that the primary flow of uncertainty in organizations occurs from higher to lower contiguous levels. Figure 1 depicts the sources and primary response flows in summary form. These are further described below, after which the dimensions are described.

Sources and Responses

Shown in Table I are several sources and responses to uncertainty arranged by level of analysis. Major environmental sources of uncertainty operating at the organization level of analysis are suppliers, customers, competitors, creditors, government agencies, and unions. These represent the immediate sources of uncertainty experienced by an organization. Economic, political, and sociocultural events and trends also cause environmental uncertainty, but these events and trends will typically be enacted through the agents presented in Table 1. In the context of organizational objectives, organizations respond to environmental uncertainty from these sources through strategy and structure. Structuring occurs both between and within organizations. These responses are essentially efforts to limit information need or facilitate action through greater predictability (Milliken, 1983). These organizational-level responses, while serving to reduce uncertainty for the organization, may cause additional uncertainty, particularly of a technological and political nature. This incremental uncertainty can occur at all levels but would be expected to be most salient at the unit level. This uncertainty in turn generates action requirements and thus demands for information.

As indicated in Table 1, units respond strategically (e.g., through competition

Figure 1. Source and response flows of uncertainties.



or coalition formation with other units), technologically (e.g., through the creation of slack or protection of the technical core), and via design (e.g., through allocation of authority or development of procedures and rules). Thus, unit-level responses are made necessary in part by environmental sources of uncertainty and the organizational-level responses to them. For example, a selected marketing strategy in response to organizational uncertainty may result in unit technology and politicking that lead to new uncertainty and perhaps to a competitive response by the marketing unit vis-a-vis other units in the organization. In general, organizational responses are likely to influence unit and other level responses because they generate technological and political sources of uncertainty at the unit level.

The flow of uncertainty from environmental, organizational, and unit actions means that, for the group, the unit is a source of uncertainty. The impact of the unit on group uncertainty is articulated through group interactions and tasks. Group interaction patterns and tasks are partly determined by unit uncertainty. Responses to uncertainty at the group level include actions directed at the interaction of the members and/or at the task faced by the group (Hackman, 1968, 1976). Responses directed at member interaction include establishment and clarification of the group including its role, status, and norm structure. Responses directed at the nature of the group's task may include task redefinition and control. That is, a group may seek to redefine its mission so as to reduce or eliminate components about which there is uncertainty, or seek to gain greater control of the forces upon which it is dependent in order to perform its tasks.

Groups may not be as effective as desired, however, in dealing with their uncertainty by structural and task responses. As a consequence, affective coping strategies may be used, such as increasing group cohesion in order to facilitate the creation of social support (House, 1981). A group providing social support may buffer the impact of uncertainty on the group members even though the uncertainty remains.

The group's leader can be critical in determining the effectiveness of the group's responses to uncertainty. For example, the leader can help the group clarify its structure, redefine its tasks, and build group cohesiveness, thereby resolving or coping with group-level uncertainty. Alternatively, the leader may become a source of uncertainty for the individuals in the group.

As shown in Table 1, job qualities and individual qualities are two categories of individual stress sources. Within the job qualities, there are three primary sources of uncertainty for individuals: tasks, rewards, and roles. An individual can be uncertain with respect to his/her job (e.g., How can I best do my job?), his/her rewards (e.g., What do I receive for performing well?), and his/her role (e.g., How much authority do I have?). It is likely that as the group's tasks are varied and unpredictable, individual uncertainty will be greater, particularly to the extent the individual is inexperienced and the supervisor is unable to provide structure to the individual. Individuals may also experience reward-related un-

certainty, especially if supervisors do not adequately convey reward contingencies, and/or if the personnel policies and practices of the organization are not sufficiently formulated. Finally, role-related uncertainty is likely to occur if, at the group level, the roles group members are to play are not clearly established, whether by the group or the supervisor. Consequently, the individual will be unclear as to how much authority and responsibility he/she possesses in performing his/her job. Throughout these events, individual qualities, such as personality characteristics, can play a critical role. These are described later.

Faced with one or more types of uncertainty, individuals can`respond in several ways. Many of the individual responses to uncertainty are those typically associated with stress, and as such can be classified as physiological, psychological, and behavioral. The assumption here is that uncertainty is not experienced by most individuals as a neutral condition. Included as physiological responses are headaches, backaches, coronary heart disease, and elevated blood pressure (Fried, Rowland, & Ferris, 1984). Psychological responses, as well as some behavioral responses, reflect an important aspect of uncertainty, namely, that the event about which uncertainty exists may be associated with potentially important positive or negative outcomes. With regard to potentially positive outcomes, uncertainty may result in responses such as excitement and high performance. Alternatively, uncertainty may be associated with negative psychological and behavioral responses, such as depression and absenteeism (Schuler, 1980a, 1982). Regardless of whether the individual perceives the uncertainty as associated with positive or negative outcomes, an individual's responses may vary as a function of time. That is, it is likely that some types of physiological outcomes occur ¡mmediately upon perception of the uncertainty, while others only occur after a longer term of exposure to uncertainty (e.g., elevated blood pressure and coronary heart disease). Similarly, psychological and behavioral responses vary over time with certain responses such as depression and absenteeism occurring only after longer-term exposure to uncertainty.

Exactly how individuals cope depends upon both the individuals and their situations, but in general individuals can respond actively or passively. Active responses include direct attacks on the sources of uncertainty, for example, going to the supervisor to get role clarification to reduce uncertainty. Passive responses include denial and avoidance, behaviors that essentially do not change the actual level of uncertainty. Although these two categories of responses are quite different, both may be appropriate. The appropriatenesses of responses to uncertainty depends in part upon the type or nature of the uncertainty.

As uncertainty flows through an organization, it is possible that the dimensions of the uncertainty will vary across levels. Diagnosis of uncertainty at one level, therefore, may be limitedly related to diagnosis at subsequent levels. Thus, not only must uncertainty be assumed to flow through organizations, it must be diagnosed at each level in the organization. Furthermore, the relationship between levels should be diagnosed because the tightness or looseness of the coupling

between the levels is apt to influence the nature of the flow of uncertainty across levels (Weick, 1974).

Moderating Variables

Any one of several moderating variables may be expected to contribute singly or collectively to the degree of perceived uncertainty and/or to the responses to uncertainty. Variables proposed to exert a moderating influence at one or more of the levels of analysis in our uncertainty model include:

Relative power	Tolerance for ambiguity
Time pressure	Field dependence
Individual ability	Availability of feedback
Importance of issue	Locus of control
Task interdependence	Group cohesiveness

Some of the moderators, such as degree of interdependence, may influence the amount of perceived uncertainty, such that a greater degree of interdependence is likely to result in a greater degree of perceived uncertainty. Similarly, individuals with greater field dependence may experience more uncertainty than those with less field dependence. Other moderators are important because they are apt to influence responses to uncertainty. For example, a more competitive strategy might be pursued at the unit level if the unit is powerful, but a cooperative one would be required if the unit lacks power. To the extent uncertainty is important and demanding of immediate resolution, the need for action will be particularly intense, and a response may be immediately forthcoming that differs from the response that would have been enacted in the absence of great importance or time pressure. Individuals with a low tolerance for ambiguity are more likely to quickly invoke responses to uncertainty than individuals with a high tolerance for ambiguity. Groups that are highly cohesive may be able to tolerate uncertainty more than less cohesive groups and, therefore, be less likely to produce responses quickly. Since moderating variables have the potential to exert significant impact on perceived uncertainty and responses to it, it is important that they be diagnosed along with the dimensions of uncertainty and the sources of uncertainty. In this section, we have presented only the major components of the uncertainty model. More specific components and those more revelant to PHRM practices are discussed in the following sections.

PHRM PRACTICES AND UNCERTAINTY AT THE ORGANIZATION LEVEL OF ANALYSIS

As presented in our model of uncertainty, sources of stress or uncertainty vary across the several levels of analysis. Many of these sources are related to PHRM practices. This implies that PHRM practices can be a useful tool for stress

management. To show how PHRM practices can be used for stress management, we examine each level of analysis separately. Our purpose at each level is to *illustrate* how the practices can be used, rather than to exhaust all possibilities of how they might be used.

At the organizational level, key sources of uncertainty are found in the environment as shown in Table 1. That the elements in a focal organization's environment are other organizations was recognized by Levine and White (1961) when they suggested that exchange relationships between organizations resulted in interdependence. Evan's (1966) concept of the organization set further specified a given organization's environment in terms of interorganizational dependence due to relationships with suppliers, competitors, government agencies, unions, clients, and creditors. These can be considered sources or originating points of uncertainty for organizations. Consistent with a resource dependence perspective (Pfeffer & Salancik, 1978), organizations can transact conditions and can alter their own technical, design, and strategic forms and processes.

The resource dependence perspective of environment-organization relationships assumes a condition of some uncertainty about the availability and nature of needed resources, including materials and supplies, capital, and labor. Control over resources and interorganizational power relationships are important determinants of the amount of uncertainty at the organizational level. Within this setting, the way that PHRM practices can be used to manage "stress" is by gaining power and reducing dependencies. Schuler and MacMillan (1984) have argued that the way to do this is to use PHRM practices strategically, thereby gaining a "competitive advantage. i[3] As the following discussion shows, a competitive advantage often requires that the organization minimize, or at least manage, environmentally induced uncertainty.

Reducing Organizational Uncertainty: Using PHRM Practices to Gain a Competitive Advantage

An understanding of how companies can gain a competitive advantage through their PHRM practices is facilitated by a discussion of strategic targets and strategic thrusts.

Strategic targets. There are four targets of PHRM practices that can be used to reduce uncertainty and gain a competitive advantage. These are: *(a) customers, (b) distributors!servicers, (c) suppliers,* and *(d) the focal company*. For instance, we find that Unifi helps *customers* with their performance appraisal systems to ensure that their customers are competitive and able to buy Unifi products. Pepsico trains store managers (Pepsico's *distributors)* in merchandising techniques to help increase store sales as well as sales of Pepsico. For both Unifi and Pepsico, these practices increase the stability of demand for their products, thereby reducing uncertainty. As another example, Nissan Motors offers exten-

Table 2. Matrix of Thrusts and Targets

	Target			
	Self	*Customers*	*Distributors and Servicers*	*Suppliers*
Costl Efficiency				
Product Differentiation				

sive training programs to its parts *suppliers* in order to ensure that they receive consistently high-quality products. Use of these high-quality products results, in turn, in predictably better quality products being produced by Nissan, thereby improving their competitive advantage.

Strategic thrusts. In addition to these four strategic targets, Schuler and MacMillan (1984) identified two strategic thrusts, or ways to beat the competition through human resource management practices. The cost-efficiency thrust represents PHRM practices that are used to improve the efficiency of product production and thus to lower the cost of the product. This thrust is represented by McDonald's extensive training of franchise owners. The goal is to assure that new franchises are run efficiently, thereby increasing the parent company's certainty about the success rates of its distributors. Like efficiency, differentiating one's product or the company from those of competitors is a strategy for reducing uncertainty regarding the demand for one's goods or services. Companies that have achieved differentiation at least in part through PHRM practices include IBM, which provided programming training for *customers'* employees. General Electric's Power Systems Division recognized that its sale of large equipment contracts worldwide depended on a combination of traditional technical skills and radically new financing skills. They responded by staffing to secure these skills and now have differentiated themselves as producers of power systems, with affordable financing options in Third-World countries.

The 4-targets-by-2-thrusts matrix shown in Table 2 provides the firm seeking

a competitive advantage with eight broad options for using PHRM practices. All of these options are effective to the extent they reduce uncertainty for the organization as the unit of analysis. Yet the identification of targets and thrusts does not in and of itself explicate *how* PHRM practices can be utilized to reduce environmental uncertainty. In the next few paragraphs, we review a variety of possible ways to use PHRM practices to reduce organizational uncertainty.

Planning. Perhaps the most obvious way for human resources managers to reduce organizational uncertainty is through planning for they future human resources needs of their firms. Increasingly companies are being forced to link human resources planning with strategic business planning. Recent census data indicate that the number of young workers in the labor force peaked at 37 million in 1980 and will drop to 24 million by 1990. Meanwhile, each year 2.3 million 17-year-olds are added to the ranks of the functionally illiterate. In anticipation of a desperate need for literate young workers at all levels, companies such as Texas Instruments and New York Telephone are getting into secondary and primary education to help increase the literacy rate in the reduced supply of labor force entrants in the 1980s. Without such action, the very ability of some companies to survive is uncertain at best.

Another aspect of planning that companies are addressing is the 25-54 year-old age group that is moving through the workforce and which is creating a rapid expansion of potential managers with a narrowing base of managerial jobs. Added to this situation is the desire by many of those in this age category to be promoted and be successful. The intersection of these events is producing a company need for flexibility and current, up-to-date skills. To cope with the uncertainties produced by this situation, companies such as Bank America Corporation and Eastman Kodak Company are offering attractive early retirement packages for carefully selected groups of employees. If the current demographic, economic, and technological trends continue, it is reasonable to assume that the companies that most systematically plan for their human resources needs will be most likely to gain a competitive advantage and effectively manage this uncertainty.

Union-management relationships. Critical to the success of many companies vis-a-vis competitors are their labor costs. In many industries today, companies face possible bankruptcy due in part to high labor costs. Helping to lower costs and lower the amount of uncertainty about survival are wage reductions reached between unions and management.

Crown Zellerbach Corporation and the International Woodworkers of America demonstrated, however, that a competitive advantage can be gained without reducing total wages. Based upon a recent incentive pay plan agreed to by the union and management, workers earn about $3 more per hour than before on straight wages. Because this incentive system makes the workers more produc-

tive, the company agreed in exchange to give the union greater worker involvement in work-related decisions. Thus, the workers gained both involvement and higher wages and the company gained competitiveness through lower costs.

At Westinghouse Corporation, Warner Gear Division of Borg-Warner Corporation, and the Mass Transportation Authority of Flint, Michigan, gains in quality and efficiency have resulted from employee commitment associated with quality circle programs. In addition to increased quality and efficiency, these companies have experienced fewer grievances, reduced absenteeism and turnover, lower design costs, higher engineering productivity, and fewer costly changes in design cycles.

Training and development. Training can be a very effective tool for reducing uncertainty related to various groups external to the organization and with whom the organization is interdependent. As already noted, McDonald's uses its intensive training program at Hamburger University to ensure that its franchisees run as efficiently as possible. Dayton Hudson Corporation is using training and development skills to create future customers. Dayton's B. Dalton Bookseller Division has earmarked $3 million over four years for a literacy training program. Their goals are to recruit volunteer tutors and tell people without basic skills about the free teaching programs available in their communities. As a part of this effort, Dalton gives grants to local school districts to hire speakers who will persuade teachers to put more emphasis on teaching reading skills. Texas Instruments is engaged in a similar program. While the result of both the B. Dalton and Texas Instruments programs is of immediate benefit to the individuals gaining literacy, the companies broaden their base of potential customers over the longer run.

In our preceding description of how planning, union negotiations, and training can be used to improve an organization's effectiveness, we have focused on the role these activities can play in *reducing* the amount of uncertainty an organization experiences as a result of its interdependencies with external organizations. Directly reducing uncertainty by changing one's environment, however, is only one of two possible ways PHRM practices can help organizations cope with uncertainty. The second alternative is to use PHRM to enhance the organization's capabilities for responding appropriately to the uncertainties they face. This implies making internal changes in the organization. The distinction between focusing on the external environment vs. the organization's internal environment is comparable to the distinction stress researchers make between primary and secondary coping. Examples of how PHRM practices can be used to make internal changes that improve an organization's ability to cope with uncertainty are easy to generate. The traditional role of PHRM has been to attract, retain, and motivate employees for the purposes of maximizing organizational effectiveness. Thus, the primary functions of selection, training and socialization, performance appraisal, and compensation practices can be viewed

as maximizing an organization's ability to respond appropriately to the environment through internal changes.

When successful in gaining a competitive advantage, companies manage uncertainty and stress from the environment. But even if successful here, some uncertainty still flows down to the unit level as depicted in Figure 1. Accordingly, PHRM practices again can be used, though differently, to help manage stress in the organization.

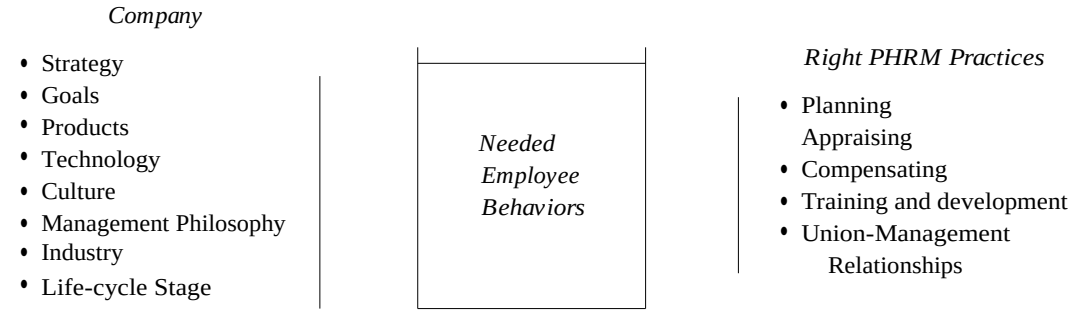
PHRM PRACTICES AND UNCERTAINTY AT THE UNIT LEVEL OF ANALYSIS

As shown in Table 1, technology and organizational politics are the key sources of stress and uncertainty at the unit level. Uncertainty has been a central component of conceptualizations of technology. Thompson's (1967) typology consisted of categories defined by the amount and nature of task interdependence, and the predictions of Lawrence and Lorsch (1969) centered on clarity of information, uncertainty of cause-effect relations, and feedback time. In Perrow's (1967) formulation, both the new material dimensions of variability and understandability and the technology conceptualization of exceptional cases and analyzability of search processes revolved about the nature of needed information. The Aston group (Hickson, Pugh, & Pheysey, 1969) viewed technology as comprised of operational techniques, raw materials characteristics, and required knowledge. This view incorporates both task interdependency and information components of uncertainty. Finally, the uncertainty facet of technology was explicitly recognized by Slocum and Sims (1980) when they suggested that organizations experience uncertainty both across boundary transactions and within conversion processes.

Most theoretical and empirical considerations of uncertainty-based technology have examined the relationship between technology and organizational design or structure. Basing their work on Perrow's (1967) theorizing, Hage and Aiken (1969) found work routineness associated with particular characteristics of organizational design. Mohr (1971) and Duncan (1973) discovered empirical relationships between technological uncertainty and decision-making structures, while Meyer (1968) and Blau, Falbe, McKinley, and Tracy (1976) found more bureaucratic designs associated with less uncertain work operations. Using an objective indicator of uncertainty, Keller (1978) found organic management systems more effective in the face of uncertainty. However, Robey (1982), operating under the assumption that uncertainty is the most basic criterion governing choices among design alternatives, suggested that both mechanistic and organic design forms can be adjusted to treat greater technical uncertainty.

Some of the research investigating the design consequences of technological uncertainty has concentrated on control system and coordination strategy components of design. Van de Ven, Delbecq, and Koenig (1976) found that more

Figure 2. Determinants of the right PHRM practices.



uncertainty was related to more horizontal communication coordination and less hierarchical and planning types of coordination. The uncertainty-based model of Slocum and Sims (1980) suggested that the interdependency resulting from boundary and conversion process uncertainty called for particular control systems and coordination strategies. Control systems could focus on individual behavior or output, while coordination could occur through plans and schedules, mutual adjustment, or standardization.

Two points emerge from this brief discussion of the technology/design literature. First, just as in the environment-organization research, the notions of required information and interdependency are fundamental to the concept of technology. Second, design or structure represents an effort to organize activities in response to these information and dependency requirements that derive from environmental conditions and technical operations. Given their goals, organizations are designed to address environmental and technical uncertainty in the form of information and work dependency requirements (Galbraith, 1973). While size has not been examined directly in connection with uncertainty, it is assumed here that size considerations are involved in these applications of technoeconomic design criteria to uncertainty.

Based on the preceding discussion, an essential way for units to manage stress is by managing the technological uncertainty. If technology is taken as a given, the organization must manage around the technology. PHRM practices are critical at this level of analysis. If PHRM practices correctly fit the technology, they can foster and facilitate behaviors and attitudes necessary because of the technology. In other words, to manage technological uncertainty, organizations should determine the employee behaviors needed to implement the existing technology (e.g., using job analysis) and design PHRM practices to encourage these needed behaviors. When technology is not the only determinant of needed behaviors, PHRM practices can also be fitted to the other determinants (e.g., organizational culture, goals, and product life cycle). These relationships are illustrated in Figure 2.

The assumptions underlying our discussion thus far are that PHRM practices actually vary and that some PHRM practices are better than others for particular situations. These assumptions imply that a major task of PHRM practitioners is to correctly choose and align PHRM practices to the organization's technology.

Challenges in Choosing and Aligning the Right PHRM Practices

Although the term "right PHRM practices" might imply that there is "one best way" or one best set of PHRM practices, this is not our intent. The term is meant to indicate that PHRM practitioners have a wide range of PHRM practices among which they choose the right ones for their companies. Determining which PHRM practices are most right is a major challenge. A related challenge is ensuring that all the PHRM practices selected complement (are aligned with) each other, rather than work against each other. When organizations fail to select complementary PHRM practices, the result can be increased employee uncertainty caused by the conflicting cues sent to employees via the PHRM practices.

One way to think about the options available to the PHRM practitioner is to imagine a Chinese menu. The menu presents the vast range of choices a PHRM manager has in implementing each major personnel practice. Choosing from this menu is determined by what is best for the company, given its strategy, goals, and products, and the needed behaviors these imply, as illustrated in Figure 2.

Our discussion about choosing and aligning the right PHRM practices is divided here into two major sections. The first section describes the vast range of choices a PHRM manager has in implementing each PHRM practice, and the second section describes the choosing and aligning processes. While these suggestions are only in the formulative stage of development, if found to be descriptive, they offer ways that PHRM practices can manage uncertainty at the unit level.

A Menu of PHRM Practices

In our menu of PHRM practices there are five groupings, the number chosen reflecting five major PHRM functions: (a) planning, (b) staffing, (c) appraising, (d) compensating, and (e) training and development. Like ordering in a Chinese restaurant, multiple choices must be made rather than one, and it is *within* each group that the real choices exist. Since the five PHRM functions are familiar to most PHRM researchers and practitioners, they are only briefly described in our discussion below. Described in more detail are the choices within each function.

Planning. The planning entree consists of macro and micro activities. Macro activities include establishing a company's human resources needs often based upon its strategy and objectives and determining the approximate supply of human resources based upon analyses of the company's external and internal environments. Once these projections are made, PHRM programs need to be established to ensure that the right people are at the right place at the right time (Walker. 1980).

Facilitating the establishment of programs to fulfill the macro-planning activity

are the two micro activities of analyzing and designing jobs. These two activities determine the essential job dimensions and the individual skills, knowledge, and abilities (SKAs) necessary for those dimensions. They also determine the extent of interdependence among jobs, that is, the extent to which jobs can be designed around the individual or a team of individuals. The extent of interdependence among jobs is also determined by the structure or design of the entire company and its subdivisions. As such, decisions about structure or design are included in this planning entree.

There are many choices in the planning entree. The first choice is the *extent* or *degree of formalization.* The more formal the planning activity becomes, the more attention and concern shown to planning for human resources. One example of more formal planning is Hewlett-Packard's willingness and ability to state and support its human resources policy of "not to be a hire and fire company." Other examples of more formal planning include designing jobs to attract and retain the best people and to maximize their performance contribution to the organization, designing organizational structures to match the product needs of the organization, and developing organizational climates that cultivate trust and openness.

A second choice in the planning entree is the *degree of tightness.* Almost necessary to the implementation and success of a more formal planning policy is the establishment of a tight rather than a loose link between human resource planning and corporate planning. The articulation of this necessity is most evident in the recent discussions of corporate strategic management and human resource management (e.g., see Milkovich, Dyer, & Mahoney, 1983).

A third choice is the *time horizon* of the planning. Companies can choose to plan only for the very short-term human resources needs or extend themselves much farther into the future. It appears, however, that companies need to have a longer-term time horizon, since a company's human resources characteristics are so slow in changing (Skinner, 1981). Nevertheless, since a company's environment may be volatile, short-term responses and adjustments by the company may be required.

The next choice is related to job analysis. A critical choice in job analysis is choosing the *degree of explicitness.* On the one hand, job dimensions and requisite skill and behavior requirements can be detailed precisely; on the other hand, they can be described in general terms with more emphasis on the results expected of the job incumbent. A related choice is job design, which can vary in its *degree of breadth.* Presumably, more broadly designed jobs provide for more employee autonomy, skill usage, and identification with the product itself, whereas more narrowly designed jobs limit these employee/task attributes.

Organizations can be designed or structured in many ways. The recent attempts to rationalize organizations and eliminate middle management represent ways of restructuring. Another way is matching the structure to an organization's environment. Still another way that appears more relevant to human resources

management is the *degree of integration* across company units. At the low end, companies can choose to be relatively segmented and at the high end they can choose to be highly integrated. The more integrated the company, the more interaction, both formal and informal, that employees have with their counterparts from other areas of the organization (Kanter, 1983).

A final planning choice is the *degree of employee involvement* in the planning activity itself. The involvement can range from low to high, with high indicating that employees are engaged in providing input to short- and long-range human resources planning forecasts, in the analysis of their jobs, and-even in the design of their jobs.

Staffing. The staffing entree consists of all the activities necessary in obtaining the right people for the right job at the right time. The two major components of staffing are recruitment and selection. Throughout the staffing activity there are, again, many choices. The first choice is choosing *the source* from which to recruit applicants. At one extreme, companies can choose to use internal sources exclusively (e.g., other departments in the company and other levels in the organizational hierarchy). At the other extreme, they can use external sources exclusively. Although this choice may be limited for entry-level jobs, it is a very ¡mportant one for most other jobs. Recruiting internally essentially means a policy of promotion-from-within. While this policy can serve as an effective reward, it commits the organization to providing training and career development opportunities if the promoted employees are to perform well.

Associated with this first choice is the second choice of establishing *broad or narrow career development paths* (London & Stumpf, 1982). The broader the paths that are established, the greater the opportunity for employees to acquire skills relevant to many functional areas and the greater the opportunity to gain more exposure and visibility in more parts of the organization. The time for this process of acquiring additional skills, however, is likely to be much longer than that required for the acquisition of a more limited skill base. Thus, promotion may be quicker under a policy of narrow career paths, although an employee's career opportunities may be more limited over the long run.

Another staffing choice is whether to establish *one or several promotional ladders.* The decision to establish several promotion ladders enlarges the opportunities for employees to be promoted and yet stay within a given technical specialty, without having necessarily to assume managerial responsibilities. Establishing just one promotion ladder enhances the relative value of a promotion and increases the competition in getting it.

Part and parcel of a promotion system are the *criteria* used in deciding who to promote. The choice here is in the degree to which the criteria for promotion are explicit or implicit (Cummings, 1984). The more explicit the criteria, the less adaptable the promotion system is to exceptions and changing circumstances. What the company loses in flexibility, however, the individual may gain in

clarity. This clarity, however, may only be beneficial for those who fulfill the criteria exactly. The more implicit the criteria, the greater the flexibility to move employees around and develop them more broadly (Cummings, 1984).

The last staffing choice we will discuss is the *degree of openness* in the staffing procedures. The more open the procedures, the more likely there is to be job posting for internal recruitment, self-nomination for promotion, and self-nomination and involvement in assessment centers for promotion. The less open and more secret the procedures, the more limited the involvement of employees in selection decisions, but the faster the decisions can be made. To facilitate a policy of openness, however, companies need to make the relevant information accessible to employees.

Appraising. The appraising entree consists of the several activities involved in gathering and utilizing performance appraisal data. Rather than merely a type of appraisal form, appraising performance is an entire system, the performance appraisal system (Carroll & Schneier, 1982). Thought of as a system, performance appraisal includes developing criteria and designing forms against which to appraise and evaluate worker performance; gathering the appraisal data from the supervisor, other employees, and maybe even the worker being appraised; and using the data for the stated purposes.

A major choice in appraising is whether to appraise and evaluate behaviors or results. Appraisal of behavior focuses on *how* things are done, while appraisal of results focuses on *how many* things are done. Companies must also choose whether to emphasize *short-term* or *long-term criteria* in appraising and evaluating employees.

Another choice is selecting the *general purpose* to be served by appraisal. As identified by Cummings (1984), appraisal can be used to develop employee performance, to maintain it, or to improve it. He refers to these three purposes of appraisal as development action program (DAP), maintenance action program (MAP), and remedial action program (RAP), respectively. DAP is future oriented and focuses heavily on spotting employees who are likely to do well on more challenging jobs and provides developmental opportunities to help ensure they achieve that goal. In contrast, RAP is more present oriented and seeks to spot current performance deficiencies, analyze the reasons for them, and then design programs to remove them (Mager & Pipe, 1970). MAP is concerned with maintaining current employee performance levels.

A third choice is the *degree of employee participation* in the entire performance appraisal system. Companies can choose to have employees involved in each of the components of the system, in only some of them, or in none of them. For example, PHRM managers can involve employees in writing their own job descriptions, identifying critical job dimensions, and then identifying examples of effective and ineffective performance on those dimensions. In addition, employees can be asked to appraise each other as well as themselves. At the other

extreme, employees could be excluded from actively participating in any of these components.

A final choice in appraising is selecting whether more weight is to be given to *individual-determined criteria* or more to *group-determined criteria.* On the one hand, employees may be appraised individually on criteria over which they individually have a great deal of influence, and, on the other hand, they may be appraised individually on criteria over which they collectively have a great deal of influence. If collective action is required to get results, group criteria are more appropriate in appraising individual performance than when collective action is not required.

Compensating. Compensation consists of several major activities, including the determination of the value of jobs (job evaluation), the establishment of the base pay (rate) levels for jobs, the implementation of incentive pay plans, and the establishment and administration of indirect compensation.

One of the first compensation choices companies have is the *basis of determining the relative pay* of employees. As described by Lawler (1984), methods of evaluating jobs, such as point factor rating, have been traditionally used by organizations. A newer alternative he suggests is the skill-based approach to the evaluation of job-relevant skills the employee possesses rather than an evaluation of the job the employee is doing.

A closely related choice is determining the *level of base pay,* which can range from low to high relative to competitors. As part of this choice, companies can choose to pay this base pay on an hourly basis or on a salary basis. Implied in the use of an hourly basis is that employees are not paid for time missed, as it is when employees are paid on a salary basis.

The determination of the level of base pay may be influenced in part by another choice for the company: whether to be more concerned with *internal equity* or *external equity* (Lawler, 1984). That is, companies can choose to determine pay rates for jobs that reflect their relative worth as determined by the company's own internal job evaluation program, or to determine pay rates for jobs on the basis of those paid by other companies.

Another critical choice is whether to provide a relatively *low benefits package* or a relatively *high benefits package.* A related choice is whether to provide *few perquisites or many*. Though often presented in the context of benefits, companies can also choose to offer varying *degrees of flexibility* in the total compensation package employees receive. Companies can choose to offer a standard package of direct and indirect compensation or they can offer a great deal of variety and flexibility in the mix and value of components in the total compensation package, such as found in flexible pay programs.

In offering more flexibility in total compensation packages, companies are also in part making the choice of *how much employee participation* to have in compensation. Since employees are the best judge of what they really value,

having high employee participation along with offering flexibility makes a great deal of sense. There are also other aspects of compensation, however, in which employees can participate, for example, job or skill-based evaluations and salary increase decisions (Lawler, 1984). To allow participation obliges the company to be ready to provide relevant pay information and abandon any attempts for pay secrecy.

Other compensation choices are whether or not to provide incentives, and, if so, whether they are to be more *short-term based* or more *long-term based.* For example, companies can choose to offer either cash or stock to reward achievement of short-term (less than 12 months) goals on criteria such as output, sales, or return on capital, or offer rewards such as incentive stock options (ISOs) or stock appreciation rights (SARs) for longer-term goal attainment (Bentson & Schuster, 1983).

Whether or not incentives are provided on the basis of the short term or the long term, the *general criteria* on which they are provided may vary. Two criteria in particular are quality and quantity. Companies may choose to offer incentives and merit increases based more upon quantity of performance or more upon quality of performance.

Related to the choice of time frame of incentives is whether to provide these incentives as well as base pay on the basis of *individual* or *group performance* (such as in gainsharing plans). Lawler (1971, 1984) has highlighted a number of considerations in making this choice, and indicated that merit pay can also be administered on the basis of either individual or group (or organizational) performance.

A final choice in compensating employees is whether to offer *extensive guarantees* at all. This choice is perhaps one of the most critical, but one that excellent companies seem to make in favor of job security (Peters & Waterman, 1982). It appears as if job security facilitates employee risk-taking, longer-term orientations, and greater loyalty and commitment to the company.

Training and development. The training entree is comprised of activities that can improve the SKAs of employees in the short run or in the long run. When done for the short run (and a specific job) the activities are sometimes referred to as training. Development activities consequently focus around the longer-term career needs of employees, only part of which may be specifically needed to improve SKAs. Longer-term career needs may also involve identifying the most appropriate career path; one that is appropriate in terms of SKAs and personality, interests, and preferences. As such, development activities are concerned with performance issues and quality of work life (QWL) issues. In contrast, training activities generally are concerned only with performance issues (Schuler, 1984).

As with the other PHRM functions, the training and development function also contains many choices. The first is the extent to which to focus on the *short-term vs. the long-term needs* of the employees. To the extent emphasis is given

to the short term, there will be more training programs and fewer development programs.

Even though training may be more short-run focused, it can still be offered so as to improve an employee's SKAs to do his/her present job or offered to enable an employee to learn SKAs more relevant for other jobs in the organization. A similar distinction can also be made with development programs. The choice here then is to provide training and development for *a more narrow* or *more broad application.* This choice to some degree is also influenced by whether the utilization of human resources focuses primarily on a company's need for improved productivity or primarily on an individual's need for improved quality of work life. Although those improvements are not mutually exclusive, the *primary* emphasis, as such, constitutes a training and development choice.

Another critical choice is the degree to which the training and development activities are *planned, formalized, and systematically linked* to the other PHRM activities. At issue here is how closely the training and development activities are linked with human resources planning, job analysis, recruitment, selection, performance appraisal, and compensation. Also at issue is whether these activities have been established proactively or merely in reaction to the short-term needs of the company.

Another choice is whether to deliver training and development with an *individual* or *group orientation.* Being a member of a cohort-like group can facilitate the socialization process, as well as the training and development activities. Group membership can also buffer its individual members against the stress and time pressures in the company.

A final choice in training and development is the *extent of participation* to allow employees. For example, companies can allow employees to identify preferred career paths and career goals. They can also allow employees to help identify their own training needs. This type of participation may better enable companies to spot training needs and performance deficiencies, since employees may ordinarily attempt to hide this information from their supervisors (Beer, 1981). Nevertheless, companies may still choose to allow their employees a relatively limited amount of participation in the implementation of their training and development activities.

Choosing and Aligning the Right PHRM Practices

Presented with such a vast array of PHRM practice choices, the PHRM manager needs to select "the right practices." As suggested earlier, use of the term *right practices* does not mean that only some PHRM practices are good ones. Rather, it means that the PHRM practices need to be selected on the basis of the needs of the company. The PHRM manager must, therefore, scan the vast array of choices in the PHRM entrees and select the PHRM practice that will elicit and support what the company needs. *The key here is determining what a*

Table 3. Dimensions of Needed Employee Performance Behaviors

Repetitive, predictable	Creative, innovative
Short-term focus	Long-term focus
Cooperative, independent	Independent, autonomous
Minimal quantity	Maximum quantity
Low quality	High quality
Low risk	High risk
Process	Results

company needs. From a PHRM perspective, what a company needs are *behaviors* from its human resources that enable it to be productive and profitable. Because companies are different, the same behaviors are not needed (at least to the same degree) by all companies. Before suggesting how needed behaviors may vary by company, however, it is important to identify the set of *potentially* needed behaviors.

Alternative Needed Employee Behaviors

Although each company needs many behaviors from its employees that are specific to the jobs in it, most companies share the need for several common or general types of employee behaviors. Since the needed specific behaviors are far too numerous and unique to individual organizations, only the needed general behaviors and their relationships with PHRM practices are discussed here.

As shown in Table 3 there are three major categories of *general* needed behaviors. They are associated with the major purposes of PHRM: *to attract, retain,* and *motivate employees to perform*. Whereas "join" and "remain" behaviors are either/or types of behavior (i.e., individuals either join the company or they do not, and employees either remain with the company or they leave), the performance behavior is much more complex. Consequently, it is useful to briefly describe the several dimensions of performance before matching them with PHRM practices.

Performance behaviors. The first continuum shown in Table 3 depicts performing behavior in an *extremely repetitive,* predictable way at one end *to extremely nonrepetitive,* creative, and innovative at the other end. While companies may want predictable and repetitive behavior, they may also want some creative and innovative behavior in order to develop new products and survive in a rapidly changing environment.

The second continuum suggests that employee behavior can be more *short-term focused* or more *long-term focused.* Companies may need their employees to work in a close, cooperative relationship. Tasks may be highly interdependent

and effectiveness may be enhanced if the employees express *a cooperative, interdependent behavior.* Alternatively, companies may require more *independent, autonomous behavior,* yet behavior that is consistent with the interests of the organization.

Although companies may desire *maximum levels of performance* (quantity-wise), they may accept a far lower level from the employees. Perhaps *a minimal level of performance* is sufficient for companies to survive and consequently this behavior level is acceptable. Similar arguments can be made for the next dimension: *quality*. For both quality and quantity, however, it' appears as if companies are now more concerned than ever about having the highest level possible on each dimension (Peters & Waterman, 1982).

Companies may also emphasize *high-risk behaviors* as necessary complements of creative and innovative behavior. It may be that only with high-risk behaviors can a company expect high rewards. Alternatively, companies may prefer *lower-risk behaviors.*

The last dimension of needed performance behaviors refers to whether a company wants employees to focus exclusively on *results* or wants employees to be concerned with *process,* or how those results are attained. Companies that use management by objectives focus mostly on results, while those that use more conventional appraisal methods focus mostly on process.

After recognizing what the potential range of needed behaviors is, a company must determine its own company-specific needed employee behaviors. Suggestions as to how companies can determine which behaviors are needed are offered after first presenting a description of what PHRM practices elicit what needed employee behaviors.

In this part of the analysis, the choice of PHRM practices depends upon the right matches. Thus, the matches need to be described. In this description of the matches between PHRM practices and needed employee behaviors, not all PHRM practices are described for each behavior. This is because not all practices are expected to influence the same behaviors with the same degree of impact. (For example, see Schuler and Martocchio's 1985 discussion of entrepreneurship.) Thus, only those that are likely to have major impact on the needed behaviors are listed.

Making sure that PHRM practices are aligned is as important as the matching process. PHRM practices give off cues for behaviors and reinforce them. Since PHRM practices are filled with options, the practices are expected to provide cues and reinforcements for different needed behaviors. Consequently, once the needed behaviors are identified, the PHRM practices that cue and reinforce those behaviors must also be identified, aligned, and implemented. The result is consistency between the needed employee behaviors and PHRM practices and consistency among the practices themselves. The result is a reduction in uncertainty for the individual as well as the organization.

Because the explication for the matching between all the PHRM practices and

needed behaviors requires more space than available, only two of the matches are discussed. Based upon our discussion, the remaining matches are left to the reader to complete.

Joining behavior. Companies need to attract the right applicants at the right time. Doing this requires that they formally plan for their human resources needs. Included in this is the job analysis to determine the SKAs applicants need to have to perform the job. To help ensure that the company is not understaffed or staffed with unqualified or unneeded employees, human resources planning should be tightly linked with corporate objectives and strategies.

To enhance the attractiveness of joining, companies should use internal sources for promotion. From the company's perspective, this also serves to expand the pool of potentially qualified applicants for upper-level management positions. Further, enhancing the attractiveness of joining, companies can offer high base salaries, high perks, incentives, external equity, and a flexible compensation package.

Repetitive vs. creative behavior. To obtain predictable, repetitive behavior, companies need to clearly identify desired behaviors, convey these unambiguously to employees, develop performance measures specific to those behaviors, and train employees to be able to exhibit them. All this translates into PHRM practices composed of explicit job analysis, segmental organizational design, and narrow and explicit criteria in staffing and performance appraisal. Companies, in this context, are concerned with maintaining performance and focusing employee attention on short-run behavior and productivity. Consequently, pay is determined on an hourly basis and there are low guarantees of job security. Training is offered primarily to improve behavior for the current jobs of incumbents.

If companies desire more creative and innovative (and thus a bit more unpredictable) behaviors, they need a set of PHRM practices that fosters an environment that is less tightly organized and more long term in orientation. Facilitating such an environment are implicit job analyses and more broadly defined jobs; more external sources in staffing to infuse new perspectives; results-oriented performance appraisal and long-term criteria; high job security; and a longer-term QWL (quality of working life) emphasis in training and development. Based upon these brief explications of two PHRM practices fostering needed employee behaviors, the reader is urged to trace through the rationale for the practices-behaviors match shown in Table 4.

Implications of Choosing and Aligning PHRM Practices and Behavior

The implications of our discussion are several and are relevant for PHRM managers, specifically, and managers and organizations, generally. A major

Table 4. Matching PHRM Practices with Behaviors

Behavior: *Short-term Focus*	Behavior: *Long-term Focus*
Planning	
Short-term segmental design	Long-term integrative design
Staffing	
Explicit criteria	Implicit criteria
Appraising	
Behavioral criteria	Results criteria
Compensating	
Short-term incentives	Long-term incentives
Job-based evaluation	Skill-based evaluation
Low benefits	High benefits
Training and Development	
Short-term	Long-term
Narrow application	Broad application
Productivity emphasis	QWL emphasis

implication is that PHRM practices can be distinguished or described on dimensions that influence needed employee behaviors differentially. This enables PHRM practices to be used more systematically to facilitate the attainment of corporate objectives and strategy. This goes beyond suggesting that PHRM practices, such as planning, be incorporated into corporate strategy, and suggests exactly how this can be done for all PHRM practices.

Another implication is that PHRM practices be administered systematically. Since each practice sends cues and reinforcements, organizational attempts for increased effectiveness and profitability will be thwarted unless PHRM practices are aligned and matched. Needed employee behaviors will only be elicited with consistency in terms of cuing and reinforcing the same behaviors across all PHRM practices. Consequently, the administration of PHRM practices must attain the needed consistency across practices, as well as attain the correct match between these practices and the needed employee behaviors. When this consistency is attained, uncertainty and stress are better managed at the unit level. This beneficial effect in turn flows down to the group and individual levels of analysis in the organization. Nonetheless, there is still need for PHRM practices to help manage stress at those two levels.

PHRM PRACTICES AND UNCERTAINTY AT THE GROUP LEVEL OF ANALYSIS

In addition to the impact uncertainty has on the relationships and processes between groups or units, it also has a significant impact on the activities within

a group. At the group level of analysis, there are several sources of uncertainty. As shown in Table 1, however, they are basically all associated with interaction patterns.

In the context of organizational functioning, the formation of problem-solving or decision-making groups is a common proactive response to uncertainty. Of the hundreds of experimental studies of intragroup processes, relatively few focus explicitly on how groups react to or cope with uncertainty. One relevant stream of research consists of studies comparing individual to group decision-making. Some of these studies reveal that groups make riskier decisions than do individuals, a phenomenon that has been labeled the "risky shift" (Wallach & Kogan, 1965), suggesting that group processes can determine how uncertainty is resolved and that uncertainty plays a role in shaping intragroup processes.

Another relevant area of group research has examined how group task characteristics affect group processes. Based on a review of the literature and an empirical analysis of 104 group tasks, Shaw (1963) identified six task characteristics. Of these, "solution multiplicity" is most relevant to our concern with uncertainty. According to Shaw (1971), for tasks with multiple solutions, many alternatives exist for attaining those solutions and no single solution can be easily verified as correct. Consistent with Fiedler's (1967) arguments, Shaw and Blum (1966) found directive leadership to be more effective when solution multiplicity was low, whereas nondirective leadership was more effective when solution multiplicity was moderate or high. In contrast to the typical assumption that work groups adopt a single structure that best fits the nature of the task at hand, McDounough and Leifer (1983) argued that as the heterogeneity of a group's environment increases, so does the probability that different group structures will exist *simultaneously within a single unit.* As suggested by the previous discussion of PHRM practices at the unit level of analysis, the characteristics of a group's task would be one determinant of the needed behaviors around which PHRM practices should be shaped. To the extent there are a variety of tasks being worked upon by different groups within the same unit, a conflict situation could easily arise if PHRM practices were the same throughout the unit, with no variation introduced to account for differences across groups. That is, generally needed behaviors at the unit level of analysis may not be similar to, or compatible with, needed behaviors specific to each group within the unit.

During the 1970s, field observations of group processes replaced the experimental studies of the previous decades. As Janis (1971) pointed out, the nature of group processes are such that they create their own hazards. Janis identified eight symptoms (referred to as "groupthink phenomena") that are likely to appear within cohesive decision-making groups and which threaten the effectiveness of the group's decision processes. Of these, three are of particular relevance to our uncertainty model: an illusion of invulnerability, an illusion of unanimity, and a pressure to conform. The symptom of an illusion of invulnerability resembles Langer's (1975) notion of an illusion of control (discussed in detail below). Like individuals whose illusions of control have been heightened, groups with height-

ened illusions of invulnerability are willing to take extraordinary risks. Another symptom of groupthink is the tendency to apply pressure to members who attempt to discuss alternative solutions not preferred by the majority. Such pressures are probably detrimental to creativity and the generation of a wide selection of alternative solutions from which to choose. The early developments and advocacy of brainstorming techniques (Osborn, 1957) seemed to occur as a response to the recognition of these pressures. The third symptom of particular relevance to our model is the illusion of unanimity, which occurs when group members censor themselves from issues and opinions that appear contradictory to the majority's position. The illusion of unanimity creates a situation in which consensus about possible alternatives is more apparent than real. As a result, uncertainty is artificially reduced. The surprising power of apparent group consensus on judgments about both ambiguous and unambiguous stimuli was well documented in the now classic studies of conformity (e.g., Asch, 1951; Sherif & Sherif, 1969). Although no research has yet been reported that examines how human resources management practices might be effective in preventing groupthink phenomena, staffing practices, such as selecting members to maximize diversity of views and rotating members through decision-making groups, may be effective antidotes to groupthink.

Field studies of role ambiguity are also relevant to a discussion of uncertainty and PHRM. Although role ambiguity is often operationalized as an individual-level variable, roles imply the existence of a group or dyad. Role ambiguity has been defined as perceived lack or clarity of information concerning (a) expectations others hold for one's behavior, (b) the consequences of one's behavior, and (c) the means through which others' expectations can be fulfilled (Graen, 1976; Kahn, Wolfe, Quinn, Sneck, & Rosenthal, 1964; Rizzo, House, & Lirtzman, 1970). When such information is lacking, the social function of roles-as mechanisms for minimizing uncertainty and increasing predictability related to interpersonal activity (Sarbin & Allen, 1968)-is hampered. Viewed in this way, role ambiguity diminishes the likelihood of certainty existing at the group level. Consequently, role ambiguity can result in group stress and the inability of group members to predict each other's behaviors. This in turn can result in lower performance (Smith, 1957; Steiner & Dodge, 1956; Torrance, 1954; Jackson & Schuler, 1985).

Thus, within this group-level setting, PHRM practices can be used to manage stress by ensuring that members of groups are certain about what is expected and that leaders are matched with the needs and characteristics of the group. The way to do this is through the use of job analysis, socialization policies, job design, and supervisory training and development programs (Beehr & Schuler, 1981). While these PHRM practices can be used to manage stress and uncertainty, they do so by either matching the situation or changing the situation in which uncertainty exists. Another PHRM practice that can be used at the group level is aimed more at the effect, rather than the cause, of stress. This practice is team

development, in particular, the development of social support groups (House, 1981; Wells, 1984). According to Wells (p. 137):

> The role of social support in stress management can be understood in the context of this kind of etiological model of physical and mental well-being. The growing awareness and acceptance that an adequate understanding of disease demands attention to psychosocial factors has led to considerable research, much of it in organizational contexts. Yet the thrust of this research has been largely confined to pathogenic aspects of the psychosocial environment, namely, psychosocial stress. Although psychosocial stress appears to exhibit generality (that is, a given stressor may be implicated in the etiology of several diseases, and many diseases are related to multiple stressors), it is clear that psychosocial stress does not always lead to illness. Attention has therefore shifted to delineating those conditions of the person and environment that mitigate or exacerabate the disease-promoting effects of stress. The recent focus on social support as one such conditioning factor is a product of this shift.
>
> Writers concerned with the phenomenon of social support have not been able to provide a clear, conceptual definition, nor, in light of this shortcoming, have researchers arrived at a single model of how social support operates to promote resistance to stress and disease. What these writers have provided is a collection of creative and enlightening reviews of social science and epidemiological studies pointing to the health-promoting character of primary social relationships (Cassel, 1976; Cobb, 1976; Gore, 1973; Gottlieb, 1981; House, 1981; Kaplan, Cassel, & Gore, 1977; McMichael, 1978; Payne, 1980; Pinneau, 1975). The scope and exhaustiveness of these reviews have perhaps militated against precise definitions and theoretical consensus, while empirical tests of primitive notions of social support have seldom been cumulative and have often been plagued with methodological problems. Still, a number of promising themes have begun to develop and be repeated in this literature.

A major promising theme from this research is that social support mitigates the effects of role ambiguity, role conflict, future ambiguity, and role overload. Consequently, typical stress symptoms such as irritation, anxiety, depression, and heart problems are less likely to occur in groups in which members report high social support than where members report low social support. Thus, PHRM practices to enhance group social support, while minimizing the side effects of group cohesiveness, are likely to be effective in minimizing the impact of stress in organizations via groups (Cohen & Syme, 1984; Schaefer, Coyne, & Lazarus, 1981; Cohen, Mermelstein, Kamarck, & Hoberman, 1984; Ganster, Fusilier, & Mayes, 1984). Yet, even if this state is attained, there is likely to be uncertainty at the individual level of analysis.

PHRM PRACTICES AND UNCERTAINTY AT THE INDIVIDUAL LEVEL OF ANALYSIS

Three general lines of research that focus on the individual as the unit of observation are (1) studies of the cognitive processes involved in decision making, (2) research on the effects of personality characteristics on task performance and emotional responses, and (3) research on situational causes of stress. Because the concept of uncertainty plays a central role in these research areas, they are discussed in some detail below.

Cognitive Processes

For psychologists interested in understanding the cognitive processing of information for the purpose of forming judgments and making decisions, the condition of uncertainty has been a central feature of their scientific paradigm. Within this paradigm, uncertainty often is defined as a probability of an event's occurrence. For the positivists, uncertainty is a characteristic of the environment. In contrast, the Bayesian perspective treats uncertainty as a characteristic of the individual that reflects the person's feelings of confidence about the truth value of a statement (see Alpert, 1980, for a fuller discussion). Regardless of whether uncertainty is assumed to be internally or externally located, however, it is operationalized narrowly as a probability value. Furthermore, this paradigm has traditionally focused on the "errors" in judgment, or biases that reveal themselves in the context of individual question answering or decision making (e.g., Kahneman & Tversky, 1973).

The narrow focus on how people process information in order to make predictive judgments or to solve stated problems makes cognitive research vulnerable to the criticism that it assumes away important issues related to problem detection and problem formulation (Bass, 1983), as well as issues related to emotional reactions to uncertainty. Nevertheless, the literature on cognitive information processing is useful in many ways. Early work helps specify the dimensions of the environment that may induce uncertainty (e.g., MacCrimmon, 1970). More recent work is a source of hypotheses and data relevant to the responses to uncertainty shown in Figure 1. For example, the importance of an issue should lead to the use of more complex, analytic decision-making strategies. In contrast, nonanalytic strategies that simply require the rote application of rules may be preferred when making mundane and frequently occurring decisions. Similarly, the complexity of the problem, defined as the number of alternative solutions to the problem and the number of attributes linked to each alternative, has been hypothesized to increase the likelihood that an analytic strategy will be selected. However, a nonanalytic strategy is more likely to be used when an immediate deadline must be met or when the decision is reversible (Christensen-Szalanski, 1980; Beach & Mitchell, 1978).

As this brief overview indicates, cognitive psychologists have typically studied uncertainty in a problem-solving or judgment-making context and therefore, they usually address the subest of reactions to uncertainty that involve intentional information processing. This literature provides little insight into an individual's emotional responses or into the responses of groups and organizations.

Personality Effects

Whereas decision theorists have assumed that common principles can be found to describe how the typical person processes and responds to information, per-

sonality theorists assume that an individual's unique characteristics are important determinants of their reactions. The reader should note here that personality researchers have preferred the term ambiguity to uncertainty. The operationalizations of ambiguous situations employed by personality researchers reflect several of the objective dimensions shown in Figure 1. Like the research on cognitive processes described above, personality research has focused on the various potential reactions to ambiguity or uncertainty.

Tolerance/intolerance of ambiguity is one personality characteristic that has been studied as a determinant of an individual's reaction to ambiguous situations. Across a variety of studies, ambiguity intolerance has been found to be significantly correlated with both affective and behavioral reactions, including several of particular relevance to problem solving under conditions of uncertainty, such as being dogmatic, having a preference for the familiar and the less complex, as well as being low in cognitive complexity, choosing relatively structured occupational fields, being unlikely to become entrepreneurs, exhibiting low creativity, and performing poorly on anagram tests (Jackson, Zedeck, Lyness, & Moses, 1983). In addition to these empirical relationships, ambiguity intolerant decision makers have been hypothesized to be highly motivated to reduce their experienced ambiguity, either by proactive means, such as obtaining information (McGhee, Sheilds, & Birnberg, 1978), or by defensive means, such as denial and self-shielding (Budner, 1962; Ilardo, 1973).

The degree of control one can exert is also a partial determinant of one's reactions to uncertainty. In personality research, measures of locus of control (e.g., Rotter, 1966) assess the degree to which individuals feel controlled by the environment (external locus of control) or feel in control of the environment (internal locus of control). Compared to "internals," "externals" perceive less ambiguity in their environments (Organ & Greene, 1974) and are more likely to attempt to reduce ambiguity by seeking information. When confronted with the uncertainties associated with business losses due to a natural disaster, internals were more likely to use task-oriented or problem-solving strategies to cope, rather than defensive strategies (Anderson, 1977). These results suggest that being or feeling in control increases the probability that environmental uncertainties will be interpreted as challenging opportunities to be met by the development of new strategies, rather than as threats from which one should seek protection (cf. Lerner, 1980; Schuler, 1980a).

Field dependence is a personality characteristic conceptually related to locus of control. Field dependence refers to the extent to which an individual is influenced by environmental cues (field dependence) rather than internal standards (field independence). A review of research on field dependence (Witkin & Goodenough, 1977) has suggested that field dependent people may be more likely to structure ambiguous situations by seeking information from others; they are socially attentive, sensitive, emotionally open, and able to get along well with others. Such individuals would probably increase the cohesiveness of work teams

of which they are members. If Janis (1971) is correct, such cohesiveness would be detrimental in a highly uncertain environment since cohesiveness motivated by approval-seeking would discourage the generation and discussion of unusual and potentially creative strategies for responding to uncertainty.

Situational Causes of Stress

For psychologists, the concepts of control and predictability form a central theme as explanations for why individuals experience stress (Averill, 1973; Gal & Lazarus, 1975; Miller & Norman, 1979; Thompson, 1981). In this literature, stress has often been studied in experimental settings by subjecting people to aversive or threatening events, such as shocks or anxiety-producing films. Control and predictability have been manipulated in various ways, including giving people information about the timing and intensity of aversive stimuli and by allowing subjects to control the onset and duration of stimuli. After reviewing numerous studies of the effects of control over aversive stimuli, Lefcourt (1973) concluded: "the sense of control, the illusion that one can exercise personal choice, has a definite and positive role in sustaining life" (p. 424).

For individuals, control can be characterized as behavioral, cognitive, or decisional (Averill, 1973). Behavioral control, which is one type of proactive response to uncertainty, exists when the individual is able to directly influence the objective characteristics of the environment. Early research on the impact of behavioral control suggested that control in and of itself was sufficient to reduce stress reactions to aversive stimuli, but more recent research indicates that control is most effective when it leads to uncertainty reduction (Averill, 1973).

Whereas behavioral control refers to an individual's ability to influence the environment, cognitive control refers to how the individual interprets the environment and the act of gaining information. Langer (1975) has shown that people engaged in a task such as a card game (in which the outcomes are determined entirely by chance) behave quite differently, depending on their illusions of control in the situation. Holding constant the objective environmental contingencies, Langer's subjects acted as if they could control the outcome when their competitors (who had no actual influence over the cards) appeared incompetent. The illusion of control was also heightened when people were involved in a task that was familiar to them, although their familiarity could not alter their objective chance of being effective.

As noted, laboratory studies of stress have typically focused on the effects of aversive stimuli, and, in this context, manipulations of information gain have often been in the form of warning signals prior to the occurrence of an aversive stimulus. Within such a paradigm, evidence indicates that information that increases predictability facilitates long-term adaptation to the environmental conditions (Averill, 1973). Besides gaining information, cognitive control can be

exercised by the cognitive appraisal of available cues, that is, through the assigning of meaning to events (Lazarus, 1978; Taylor, 1983). Two general appraisal styles are sensitizing and denial; sensitizing is more likely to be functional for problem solving, whereas denial is functional for regulating emotional distress.

Compared to behavioral and cognitive control, decisional control-defined as freedom to decide how to behave-has received little attention from stress researchers. Generally, the assumption has been that people prefer to exercise decisional control rather than be constrained. However, Zimbardo (1970) has argued that decisional control combined with a large number of alternative response options (i.e., uncertainty) can be an aversive situation that leads to feelings of helplessness and conflict.

The already substantial amount of psychological literature on stress is rapidly growing in size and complexity and cannot be reviewed in depth here. Our brief discussion of it is intended to illustrate the relevance of this literature for a model of uncertainty. In reading this literature, it becomes clear that uncertainty is central to stress. It also becomes clear the PHRM practices can be used at the individual level to manage stress. PHRM practices can be used to help manage stress by altering the causes of individual stress or by minimizing the undesirable effects of stress.

Using PHRM Practices to Manage Uncertainty-Related Stress at the Individual Level of Analysis

Altering the causes. By altering the causes of uncertainty, PHRM practices can play a very instrumental role in managing stress at the individual level. For example, jobs can be designed and redesigned to make sure that jobs fit the individual and/or to give greater control and autonomy to the individual. Selection and placement practices can be used so that individuals are placed in jobs that match their SKAs and personality interests and preferences (PIPs). Performance appraisal can be used to clarify to individuals what is expected and how they will be appraised. Similarly, compensation activities can be used to fairly reward individuals for their contributions to the organization. But these all tend to be *content issues* in PHRM practices. In addition are two *process issues:* degree of participation and amount of choice.

Recall in our discussion of stress at the unit level of analysis that common to all the PHRM practice menus is the degree of participation. That is, organizations have a choice in the degree of participation they wish to allow their employees in the design and administration of PHRM practices. Consistent with other research, the more participation allowed employees, the more likely they will be able to get a clear understanding of what is expected and what is rewarded (Schuler, 1980b). Consequently, the less uncertainty and stress there is for the individual. Note, however, that if conditions are clear, participation becomes less necessary for stress management.

Another aspect of the PHRM practices is the degree of choice given to employees. For example, companies can give employees a wide range of choice in the selection of compensation and indirect benefits (Milkovich & Newman, 1984). Providing choice in compensation, as well as other activities, can help ensure a better fit between the job qualities and individual qualities. In turn, this enables the individual to be in balance with the environment and therefore under lower stress (Beehr & Newman, 1978; Lazarus & Launier, 1978). Providing choice to employees also gives them a greater degree of control-perceived as well as actual. This, of course, is critical in stress management (Lazarus, 1981).

Minimizing the effects. PHRM practices can also be instrumental in managing individual stress by implementing ways to reduce the *effects* of uncertainty. The practices designed to perform this role are growing. Currently, there are a large number of companies in the United States doing stress management programs. Some of these programs go by other names such as employee assistance programs (EAPs), wellness programs, and fitness programs. According to a Hewitt and Associates survey of 1,185 companies, 36% have antistress programs and another 25% are considering them. The theme of these programs is not so much stress management but better health. This appears more positive and places equal responsibility on the employees for what happens at and because of work.

PHRM practices are being used to manage uncertainty-related stress at the individual level of analysis to a much greater extent than they are used for managing uncertainty at the other levels of analysis that we have discussed. Presently, the likelihood of the situation reversing is limited. Several major barriers to implementing PHRM practices to manage uncertainty at the group, unit, and organization levels of analysis are described next.

BARRIERS TO USING PHRM PRACTICES TO MANAGE UNCERTAINTY-RELATED STRESS

Although stress in organizations is a serious phenomenon having potentially very harmful consequences, the many ways to manage uncertainty-related stress at each of our four levels of analysis are likely to be slow in coming. First, many of our ideas are relatively new and remain to be empirically tested. Second, even if our ideas had been examined and accepted, they would take considerable time to implement, particularly at the organizational and group levels of analysis. In addition to these reasons for slow implementation, there are five others called *inertia barriers* (MacMillan, 1983), applying to varying extents to each of the four levels of analysis.

The first inertia barrier is the *needs-matching challenge.* It requires, to get the right person in the right place, a company to engage in extensive analyses. Jobs have to be analyzed, the needs and products of the company, present and future, have to be analyzed, and key individuals have to be analyzed. Then, once all

of these analyses are complete, all the diverse needs have to be matched. These analyses are anything but straightforward. Multiple approaches exist for analyzing jobs, yet none seems to be convincingly superior to the others-all have unique strengths and weaknesses. And because many companies are just beginning to think strategically, many are unable to articulate their future products and markets sufficiently to know what types of employees they will need (i.e., what skills, knowledges, and abilities will be needed). Furthermore, even after years of selection research, identifying and assessing the relevant SKis of managerial job applicants can still be regarded as an art more than a science (Skinner, 1981). These issues of analysis and implementation result in a serious challenge in trying to match the information across phases.

Associated with the first inertia barrier is the second one: *attaining consistency*. For example, with the recent need to cut costs, companies have been rationalizing their structures. A consequence of this has been the need to reduce the workforce. One popular workforce reduction strategy is offering early retirement benefits. However, companies such as Polaroid have found this practice to be completely inconsistent with their "retirement rehearsal" and "tapering off" programs. While the intent of these two programs was to ease the retirement process for its employees, the "golden handshake" retirement benefits have caused many employees to suddenly accelerate taking retirement. Not only does this result in inconsistency between their retirement practices, but often companies lose their best and brightest: these employees know they can take the retirement incentive payment and easily get another job elsewhere, perhaps even with a competitor. So, aware of the difficulties in attaining consistency across all their human resources practices, and aware of the serious consequences of failure to do so, organizations shy away from changing their current ways of managing their human resources.

The third inertia barrier is *lack of commitment.* To change personnel and human resources practices consumes vast time and energy: as we have seen, merely attaining consistency requires a great deal of analysis, even under the best of circumstances, and even more is required to meet the needs-matching challenge. If this condition is combined with any past failures to change human resources practices, it makes it difficult to get organizational commitment to new changes, especially at the top. Yet it is at the top that commitment must begin, with the top-level manager demonstrating concern, confidence, and excitement.

Because the *time horizon* is so critical it is regarded here as a fourth inertia barrier. Skinner (1981) estimated that it may take as long as seven years for managers to install, adjust to, and reap the benefits of major changes in human resources management practices, including weeding out unproductive employees and creating a new generation of employees. It may take employees equally as long to accept the changes. This is because "effective relationships between individuals and companies rest on employees' trust that the goals [of the individuals and companies] are connected. But developing trust often requires ov-

ercoming years of bad experience and many employees' belief that companies exploit people" (Skinner, 1981, p. 114). Since many managers are rewarded for short-term performance, the time horizon in changing personnel and human resources practices becomes perhaps the most significant inertia barrier.

A fifth and final inertia barrier is the *state of our knowledge* about the phenomenon we call stress. Practitioners and researchers are well aware that stress is not yet a well understood phenomenon. There are still many questions for researchers to examine in detail. Hence, there is some justification in moving slowly. For example, some questions that need to be addressed include:

1. Should organizations be responsible for the impact of jobs and therefore redesign them?
2. What is the trade-off between computer monitoring for control and appraisal and employee health?
3. What is the role of the federal government in forcing employers to redesign jobs and the work environment to reduce stress symptoms?
4. What evidence of causality can and must be produced from stress studies before corrective action is warranted?
5. Should individuals be selected for their tolerance for stress?
6. Does management have the right to change the behavior patterns of people?
7. Is it more effective to change the person's behavior or the environment?
8. Are natural disasters and technological disasters similar in their impact?
9. What are the best ways to manage acute stress, especially technological disaster?
10. Is the loss of control the key to understanding the effects of disasters?
11. What are the stress risks associated with automation?
12. Who should absorb the social costs of job loss?
13. Do employers have the right to get involved in the life stressors of employees?
14. What is the relative importance of Type A behavior and job conditions in coronary heart disease (CHD) and other symptoms?
15. What methods or approaches of coping are most effective and when?
16. What is the role of actual and perceived control in coping?
17. How can research be done ethically to determine the most effective coping methods?
18. Is it better to train individuals for direct action strategies or palliative ones?
19. Should individuals receive career counseling to prevent occupational stress?
20. What types of effective social support groups can be built within work organizations? Can PHRM practices facilitate social support groups?

SUMMARY

In this paper we have attempted to described a new way of looking at stress in organizations. Rather than looking at it exclusively from the individual level of analysis, we suggest that it be looked at from four possible levels of analysis beginning with the most macro or organizational level. This was done in recognition that stress occurs throughout organizations, although it is not usually discussed as such. Instead, stress has been treated as an individual-level phenomenon.

By treating stress as uncertainty, it is possible to treat stress as a phenomenon that occurs throughout the organization, as we did in this paper in our development of the uncertainty model. The summary and implications of our uncertainty model are reflected in Figure 1. This figure depicts several critical aspects of our discussion of uncertainty and stress and the importance of the uncertainty construct in our discussion of PHRM practices. The importance of the uncertainty construct derives from its translevel, cascading flow characteristic, its ability to explain responses at each level of analysis, and its ability to incorporate PHRM practices as a way of managing stress at several points in the organization.

The translevel, cascading flow characteristic is illustrated in Figure 1 by the directional arrows beginning with business objectives. Once these are established the potential sources of uncertainty at the organizational level of analysis are determined. The sources at this level are from the objectives themselves and from the environment, but their impact filters through the organization. Thus, the impact of the environment is felt indirectly at all levels. Most immediately, however, it goes to the unit level of analysis via three linkages. The first linkage is from organizational-level responses through the sources of unit-level uncertainty. The second linkage is more direct, but perhaps less pervasive: whatever is done to respond to uncertainty at the organizational level is likely to directly influence unit-level uncertainty. Finally, environmental sources of uncertainty can have direct impact on unit uncertainty via their influence on technological and political considerations at the unit level.

These direct and indirect cascading effects of uncertainty and responses to uncertainty occur at each level in our analysis. This implies that addressing uncertainty or stress at one level has implications for uncertainty at other levels. These implications include restricting the options available to address uncertainty at some level, resolving uncertainty at one level, but possibly intensifying it at a subsequent level, and resolving uncertainty at two levels simultaneously.

Our translevel model of uncertainty also has tremendous implications for PHRM practices. It suggests that PHRM practices really do have a strategic role to play in organizations. It also suggests that PHRM practices can be thought of in more macro terms than generally has been the case. The rewards for doing so seem to us substantial-for the organization, for individuals, and for the discipline of PHRM.

NOTES

1. In order to have the most up-to-date review of the relevant literature and research, we sent out a questionnaire to approximately 100 individuals actively working on the topic of stress. These individuals provided us with over 300 recently published works and manuscripts still under review. Although we used all of these works as well as others in the preparation of the paper, we took as our primary purpose the development of a new way to link the stress literature with the PHRM literature. We did not attempt to present a completely comprehensive review and criticism of all the published stress research. Other reviews and criticisms of the occupational stress literature appear in several excellent sources (e.g., see McLean, 1979; Cooper & Marshall, 1976; Cox, 1978; Schuler, 1980a; Payne & Cooper, 1978, 1979; and Beehr and Newman, 1978).

2. The following material on our model of uncertainty was adapted from Jackson, S.E., Schuler, R.S., & Vrendenburgh, D.J. (1986). Managing stress in turbulent times. In A.W. Riley, S. Zaccaro, & R. Rosen (Eds.), *Occupational stress and organizational effectiveness.* New York: Praeger.

3. The following material on gaining competitive advantage is adapted from Schuler, R.S. & MacMillan, I.C. (1984). Gaining competitive advantage through human resource management practices. *Human Resource Management, 23,* 241-255.

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