**Chapter 1**

**What is Stress?**

To the individual whose health or happiness has been ravaged by an inability to cope with the effects of job-related stress, the costs involved are only too clear. Whether manifested in minor complaints of illness, serious ailments such as heart disease, or social problems such as alcoholism and drug abuse, stress-related problems exact a heavy toll on individuals’ lives (Watts & Cooper, 1998). In addition, it has long been recognized that families suffer directly or indirectly from the stress problems of their members—suffering that can be manifested in unhappy marriages, divorces, and spouse and child abuse. But what price do organizations and nations pay for a poor fit between people and their environments? Only recently has stress been seen as a contributory factor to the productivity and health costs of companies and countries, but, as studies of stress-related illnesses and deaths show, stress imposes a high cost on individual health and well-being as well as organizational productivity (Cooper, Liukkonen, & Cartwright, 1996; Sutherland & Cooper, 1990).

This book examines the concept of stress and its application in organizational contexts. In the following chapters, we review the sources and outcomes of job-related stress, the methods used to assess levels and consequences of occupational stress, and the strategies that might be used by individuals and organizations to confront stress and its associated problems. We also devote one chapter to examining a very extreme form of occupational stress—burnout, which has been found to have severe consequences for individuals and their organizations. Finally, we discuss scenarios for jobs and work in the new millennium, as well as the potential sources of stress that these scenarios may generate.

The major focus of this volume is research on stress arising in job-related, organizational contexts. In each chapter, we examine critical issues concerning stress research and some of the challenges facing researchers in this broad and complex field. Our aim is not to provide a total review of all relevant studies on job stress but to stimulate awareness and critical thinking about significant theoretical and empirical issues. The present chapter begins with a brief overview of the historical origins and early approaches to the study of stress, discusses the strengths and weaknesses of these early approaches, and describes the evolution of the contemporary transactional model of stress. We conclude the chapter with an exploration of emerging themes in the delineation of stress and related concepts.

**Overview of Stress Definitions**

One difficulty in conducting research on stress is that wide discrepancies exist in the way that stress is defined and operationalized. For instance, the concept of stress has variously been defined as both an independent and a dependent variable (Cox, 1985) and as a “process.” This confusion over terminology is compounded by the broad application of the stress concept in medical, behavioral, and social science research over the past 50 to 60 years. Each discipline has investigated stress from its own unique perspective, adopting as a guideline either a stimulus-based model (stress as the “independent” variable) or a response-based model (stress as the “dependent” variable). The approach taken is dictated by the objectives of the research and the intended action resulting from the findings. What is clear from the different ways in which stress has been defined is that there has been considerable debate and discussion as to what is really meant by stress.

As we discuss in this chapter, the importance of this debate can be established by way of two points. First, theoretical definitions of concepts determine the nature and direction of research, as well as the possible explanations that can be proffered for research findings. Definitions provide researchers with theoretical boundaries that need to be constantly extended and reviewed to ensure that what is being defined reflects the nature of the experience itself (Newton, 1995). Second, the definitional debate gives a sense of time and historical perspective, shedding light on why a certain focus or approach prevails, and a mechanism for considering the explanatory potential of current research.

Almost all research on stress begins by pointing to the difficulties associated with and the confusion surrounding the way in which the term stress has been used. As has already been noted, stress has been defined as a stimulus, a response, or the result of an interaction between the two, with the interaction described in terms of some imbalance between the person and the environment (Cox, 1978). As empirical knowledge has developed, particularly that surrounding the person-environment (P-E) interaction, researchers have considered the nature of that interaction and, more importantly, the psychological processes through which it takes place (Dewe, 1992).

From this debate has emerged a belief that traditional approaches to defining stress (i.e., stimulus, response, interaction) have, by directing attention toward external events, diverted researchers away from considering the processes within the individual through which such events are appraised (Duckworth, 1986). This is not to say that such ideas have gone unresearched or that earlier definitional approaches are necessarily inadequate. However, as knowledge and understanding of stimulus, response, and interaction definitions and their associated meaning have advanced, the debate about how stress should be defined has shifted ground. Rather than singling out and focusing separately on the different elements of the stress process, we suggest that it is now time to examine more comprehensively the nature of that process itself and to integrate stimulus and response definitions within an overall conceptual framework that acknowledges the dynamic linkages between all elements of the stress process.

Contemporary views on how stress should be defined require researchers to think of stress as being relational (Lazarus & Launier, 1978): the result of a transaction between the individual and the environment (Lazarus, 1990). The transactional approach draws researchers toward identifying those processes that link the individual to the environment. What distinguishes this approach from earlier approaches is the emphasis on “transaction”—identifying the processes that link the different components, recognizing that stress does not reside solely in the individual or solely in the environment but in the conjunction between the two, and accepting that no one component (i.e., stimulus, response) can be said to be stress (Lazarus, 1990) because each is part of, and must be understood within, the context of a process.

One last point before considering the different stress definitions in more detail. It should not be assumed that different approaches to defining stress have followed in some logical sequence. A range of factors, including the discipline of the researcher, the direction of the research, and the research questions asked, will influence whether a particular definitional approach is adopted. Furthermore, at the conceptual level many researchers agree that stress should be defined in transactional terms, but empirical research has often adopted definitions that emphasize a particular part of the stress process rather than the nature of the process itself. Despite the confusion in terminology, the important message to emerge is that defining stress is not just an exercise in semantics: The way in which stress is defined has a fundamental impact on how research is conducted and results are explained, and definitions must capture the essence of the stress experience rather than simply reflect a rhetoric (Newton, 1995).

**Response-Based Definitions of Stress**

The phrase “being under stress” is one that most people can identify with, although it can mean different things to different individuals. This expression focuses not so much on the nature of stress itself but on its outcomes or consequences. A response-based approach (see Figure 1.1) views stress as a dependent variable (i.e., a response to disturbing or threatening stimuli).

The origins of response-based definitions can be found in medicine and are usually viewed from a physiological perspective—a logical stance for a discipline trained to diagnose and treat symptoms but not necessarily their causes. The work of Hans Selye in the 1930s and 1940s marks the beginning of this approach to the study of stress. In 1936, Selye introduced the notion of stress-related illness in terms of the general adaptation syndrome (GAS), suggesting that stress is a nonspecific response of the body to any demand made upon it (Selye, 1956). Selye’s focus was medical: General malaise was characterized by loss of motivation, appetite, weight, and strength. Evidence from animal studies also indicated internal physical degeneration and deterioration. Responses to stress were considered to be invariant to the nature of the stressor and therefore to follow a universal pattern.

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**Figure 1.1.**   A Response-Based Model of Stress

SOURCE: Reproduced from Understanding Stress, Sutherland and Cooper, 1990, Nelson Thornes Ltd.

Three stages of response were described within the GAS (see Figure 1.2). The alarm reaction is the immediate psychophysiological response, when the initial “shock” phase of lowered resistance is followed by “countershock.” At this time, defense mechanisms are activated, forming the emergency reaction known as the “fight or flight” response (Cannon, 1935). Increased sympathetic activity results in the secretion of catecholamines, which prepare the body physiologically for action: For example, heart rate and blood pressure increase, the spleen contracts, and blood supplies are redirected to the brain and skeletal muscles. The second stage is resistance to a continued stressor, in which the adaptation response and/or return to equilibrium replace the alarm reaction. However, resistance cannot continue indefinitely, and if the alarm reaction is elicited too intensely or too frequently over an extended period, the energy needed for adaptation becomes depleted, and the third stage (exhaustion, collapse, or death) occurs (Selye, 1983).

 

**Figure 1.2.**   General Adaptation Syndrome

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Although the nonspecificity concept of stress-related illness and the GAS have had far-reaching influence and significant impact on the conceptualization and understanding of stress, they have been challenged (Cox, 1985). Research indicates, for instance, that responses to stimuli do not always follow the same pattern and can be stimulus specific and dependent on the type of hormonal secretion. For example, anxiety-producing situations are associated with adrenalin, whereas noradrenalin is released in response to aggression-producing events. Also, the GAS approach does not address the issue of psychological responses to stress, nor that a response to a potential threat may in turn become the stimulus for another response. In sum, the model is too simplistic. As Christian and Lolas (1985) suggested, the framework of the GAS is still valid for some typical stressors (e.g., the physical factors of heat and cold), but it is not adequate to explain psychosocial stress.

An additional problem associated with the response-based approach is that stress is considered as a generic term that subsumes a large variety of manifestations (Pearlin, Lieberman, Menaghan, & Mullan, 1981). Disagreement exists about the actual manifestations of stress, as well as about where in the organism or system stress is manifested: “Is it in the single cell, in an organ or throughout the entire organism? . . . Biochemical, physiological or emotional functioning? . . . At the endocrine, immunological, metabolic or cardiovascular [level]? . . . Or in particular diseases, physical and psychological?” (Pearlin et al., 1981, pp. 341-342). Clarification of this issue is problematic because the findings of replication research are likely to be confounded. Individuals may adapt to any potential source of stress, so the response will vary over time (e.g., in the assessment of noise on hearing and performance).

Although the word stress usually has negative connotations, Selye (1976) emphasized that stress reactions are not automatically bad and that they cannot be avoided because being alive is synonymous with responding to stress. In fact, a certain level of stress is necessary for motivation, growth, development, and change and has been referred to as eustress. However, unwanted, unmanageable stressor situations are damaging and can lead to distress, or what we will refer to in this book as strain.

As influential as Selye’s ideas were, his approach to defining stress might not now be quite so comprehensive as was first thought. It was not just that different physiological components of Selye’s stress response were inconsistent with the notion of an identifiable response syndrome or the fact that certain “noxious” conditions did not produce the GAS in its entirety. Because of their medical focus, which emphasizes the organism’s response, Selye’s approach and response-based definitions generally have also been criticized because they appear not to consider environmental factors in the stress process. In other words, there has been a tendency to ignore the stimulus dimension of stress experiences.

As early as 1953, Grinker attempted to develop an alternative way of defining stress, based on the idea “that the human organism is part of and in equilibrium with its environment, that its psychological processes assist in maintaining an internal equilibrium and that the psychological functioning of the organism is sensitive to both internal and external conditions” (p. 152). Inevitably, the difficulties associated with the GAS prompted studies where the focus shifted to exploring the external conditions that lead to stress. The result was the formulation of a stimulus-based approach to defining stress, with the emphasis on identifying those events or aspects of events that might cause stress.

**Stimulus-Based Definitions of Stress**

Identification of potential sources of stress is the central theme of the stimulus-based model of stress (Goodell, Wolf, & Rogers, 1986). The rationale of this approach is that some external forces impinge on the organism in a disruptive way. Stimulus-based definitions of stress have their roots in physics and engineering, the analogy being that stress can be defined as a force exerted, which in turn results in a demand or load reaction, hence creating distortion. If the organism’s tolerance level is exceeded, temporary or permanent damage occurs. The aphorism “the straw that breaks the camel’s back” encapsulates the essence of stimulus-based definitions of stress. An individual is perpetually bombarded with potential sources of stress (which are typically referred to as stressors), but just one more apparently minor or innocuous event can alter the delicate balance between coping and the total breakdown of coping behavior. In short, this model of stress treats stress as an independent variable that elicits some response from the person.

Rapid industrialization provided the initial impetus for this approach, and much of the early research into blue-collar stress aimed to identify sources of stress in the work environment in order to provide optimal working conditions (Cooper & Smith, 1985). Considerable attention was paid to physical and task circumstances (such as heat, cold, noise, and social density). However, it is now realized that focusing solely on objective measures of environmental conditions is inadequate. Individual differences, such as variability in tolerance levels and expectations, can account for the fact that two individuals exposed to exactly the same situation might react in completely different ways. This is a major weakness of the stimulus model. In fact, Lazarus (1966) stated that no objective criterion is sufficient to describe a situation as “stressful” and that only the person experiencing the event can do this. Nevertheless, although the stimulus model has limitations, it is useful in identifying common stressor themes or patterns that might affect the majority of the workforce. In Chapter 3, we provide an overview of some of the more prevalent and pervasive stressors that are encountered in organizational contexts. However, as we shall discuss in more detail in later chapters (see especially Chapter 6), attention to the individual’s perceptions and appraisal of the stressors is essential for determining whether the person is experiencing distress or “strain.”

**Shortcomings of Response and Stimulus Definitions**

Both the response and stimulus definitions of stress are set conceptually within a relatively simple stimulus-response paradigm. It is now recognized that they largely ignore individual differences and the perceptual and cognitive processes that might underpin these differences (Cox, 1990; Sutherland & Cooper, 1990). In short, response and stimulus definitions have proved to be taxonomic in nature, providing researchers with an opportunity to establish what are essentially lists of responses and situations (or events) that may fall under each definitional heading. Such definitions are important and necessary; however, as research into stress has advanced, approaches to defining stress have often failed because they are unable to provide a comprehensive “theory of stress” or a context for considering the nature of the stress experience itself.

Specifically, three criticisms can be leveled at stimulus-response definitions. The first has already been mentioned—they reflect only one component of the stress process and say little about the process itself. Embedded within this criticism are concerns that, in an attempt to explore the range of situations and responses that may give rise to stress, little attention (at least at the empirical level) has been given to the inherent properties of the different stimuli and responses themselves. For example, stimulus definitions have been important in identifying different categories of events that have the potential for causing stress (e.g., “acts of God,” “critical life events,” and “daily hassles”). As a result, properties of the events themselves (such as their frequency, duration, demand, intensity, and severity) have been somewhat overlooked in the understandable drive to explore relationships between the mere occurrence of these different events and a range of stress responses.

Much the same can be said for response-based definitions. Because almost any response can be classified as a “stress response,” often responses are regarded as homogeneous, and little consideration has been given to the duration of the response or its pattern. Nor, for that matter, has much attention been paid to the idea that certain events may give rise to very specific responses. Therefore, to suggest that an event is not stressful may overlook the fact that researchers must pay more attention to the specificity of responses and their nature rather than simply concluding (perhaps erroneously) that no stress is present in such an encounter. Because stimulus-response definitions each focus on a single aspect of a relationship, it is only ever possible to conclude that an event has the potential to be stressful or that a response may be a stress response. We believe that a stimulus or a response can be declared as “stressful” or a “stress response” only when the two components are considered in relation to one another and the impact of one on the other has been determined. For this reason, as we shall see later in this chapter, contemporary stress definitions have focused first on the interaction between the stimulus and response and then on the transactional nature of stress itself.

The second problem that emerges when stress is defined simply in terms of a stimulus or response has also been alluded to. It is that these frameworks fail to account for individual differences. This criticism stems from the argument that knowledge of a stimulus condition, for example, does not necessarily allow exact prediction of a response because whether a stimulus is likely to produce a response depends on the moderating influences of individual differences (e.g., personality attributes, expectations, values, and goals), the context (e.g., levels of social support, control, and appraisal), and the person’s role and status within the organization (e.g., tenure, function, level in the hierarchy, and job attributes). Much of this criticism can be summed up in the view that what is stressful for one individual may not be stressful for another. Chapter 5 further discusses potential moderators of job-related stress, including individual differences.

The third criticism is directed more toward the impact that such definitions have on understanding the stress process. This criticism is best expressed by the view that arbitrarily limiting the definition of stress to only one dimension of a process draws attention away from the nature of the process itself. As we have already discussed, stress involves both a stimulus and a response in relation to one another, and it is the relational nature of stress that should be the focus of any definition (Lazarus & Launier, 1978). When considered in these terms, the aim should be to point researchers toward those processes that link the individual with the environment. To accept that stress resides, not in any one component, but in the nature of the relationship itself should be the integrating point of any definition. Early efforts to examine this relationship built upon the notion of interaction between environmental stimuli and individuals’ responses.

**Stress as an Interaction**

The interactional approach to defining stress focuses on the statistical interaction between the stimulus and the response. This approach, described as “structural” (Stahl, Grim, Donald, & Neikirk, 1975) and “quantitative” (Straus, 1973), is one where a relationship, usually correlational, is hypothesized between a stimulus and a response. This approach is essentially static (cause and effect), with any consideration of process being limited to inferential explanations when the interaction fails to materialize or is different from that predicted. This is where, according to Lazarus and Launier (1978), description has taken a back seat to simple cause-effect formulations. A definition like this, which focuses only on the interaction between two variables, means that attempts to explain the complexity of such a relationship are limited to “structural manipulations,” such as the influence of a third (moderator) variable, which again do not provide an explication of the stress process.

The above comments are not intended to imply that moderator analysis is not worth pursuing. However, as we shall see in Chapter 5, job stress research has investigated a very large array of moderator variables, sometimes with little theoretical rationale for their inclusion in a study’s design, resulting in inconsistent (and frequently ambiguous) findings about the role of these variables. We suggest that it is important now to move beyond the simple identification of potential moderator variables to more comprehensive theories that attempt to explain the mechanisms by which all relevant factors interact. Furthermore, even when moderators are selected on a theoretical basis, empirical findings often simply demonstrate a moderator effect rather than explicating the role that the moderator plays in the stress process.

Taking this argument a stage further, job stress should now be viewed as a transaction—an ongoing relationship between the individual and the environment. The interactional approach is limited in its ability to expose the causal pathways inherent in that relationship. In contrast, the transactional model of stress endeavors to explore the essential nature of stressor-response-outcome relationships and to encapsulate an understanding of the dynamic stress process itself, not merely the statistical relationship between variables.

**Stress as a Transaction**

 Whereas the interactional definition of stress focuses on the structural features of the person’s interaction with his or her environment, trans-actional definitions are more concerned with the dynamics of the psychological mechanisms of cognitive appraisal and coping that underpin a stressful encounter. There are two types of appraisal. From a trans-actional perspective (Lazarus, 1966), the experience of stress is defined first by the person’s realization that something is at stake (primary appraisal). In the primary appraisal process, the individual gives meaning to an encounter. The meanings that best express this appraisal process are those involving harm, the threat of harm, or challenge. Once an encounter is appraised as being in some way a threat to the person’s well-being, the secondary appraisal process begins. This process is concerned with the identification and availability of coping resources to deal with the threat, harm, or challenge (Lazarus, 1991). These two appraisals are the key to the stress-coping process (Dewe, Cox, & Ferguson, 1993).

Stress is, therefore, not a factor that resides in the individual or the environment; rather, it is embedded in an ongoing process that involves individuals transacting with their environments, making appraisals of those encounters, and attempting to cope with the issues that arise. At the heart of the transactional definition is the idea that stress is a dynamic cognitive state. It is a disruption in homeostasis or an imbalance that gives rise to a requirement for resolution of that imbalance or restoration of homeostasis (Dewe et al., 1993). What distinguishes this approach from other definitions is its emphasis on the process—on meaning, adjustment, and coping as core defining elements—and its focus on understanding the adaptive process itself.

As already stated, the term transaction implies that stress is neither in the person nor in the environment but in the relationship between the two (Lazarus, 1990). Stress arises when the demands of a particular encounter are appraised by the individual as about to tax or exceed the resources available, thereby threatening well-being (Lazarus, 1991) and necessitating a change in individual functioning to “manage” the encounter. The transactional definition points to three important themes—a dynamic cognitive state, a disruption or imbalance in normal functioning, and the resolution of that disruption or imbalance (Dewe et al., 1993; Holroyd & Lazarus, 1982; Newton, 1989). As will be discussed later, these themes provide the framework for modeling stress and for capturing what is believed to be the essence of the stress experience.

Thinking of stress in this way reveals a “number of profound implications” (Lazarus, 1991, p. 6) for the way stress is researched and stress interventions are designed. It requires researchers to consider which research methods are appropriate for understanding the complexities of the stress process, how such knowledge should be applied, and the responsibilities we have to those whose working lives we research. Although the application of the transactional perspective to work settings is not without its critics (Brief & George, 1991), and although it is not free of methodological concerns, job stress research “can only benefit from the careful and thoughtful application” of this approach (Harris, 1991, p. 28).

It is clear that there is a gap between interactional and transactional approaches to defining stress and that the transactional perspective requires a fundamental shift in how stress is conceptualized and researched. From an interactional standpoint (see Coyne & Gottlieb, 1996), constructs such as causes (stimuli) and consequences (responses) are “detachable entities” capable of being described independently of each other and, when entered into a causal relationship, maintain a conceptual distinctiveness. From a transactional perspective, on the other hand, such constructs are defined relationally and ultimately become inseparable from the context within which the stressful encounter takes place. As Lazarus (1990) has illustrated, no one variable can be said to be “stress,” as they are all part of the transaction process, and an independent variable at one time may (as the encounter unfolds) be considered at another time as a dependent variable. For example, trying to predict what factors influence how people cope at one time makes coping a dependent variable, whereas other research may explore coping as a predictor of an individual’s well-being and hence treat coping as an independent variable.

As noted above, there is still considerable confusion over the actual meaning of stress, which is reflected in the variety of ways in which this term has been defined (O’Driscoll & Cooper, 1996). Following the transactional model of the stress process and the terminology suggested by Beehr and colleagues (Beehr, 1998; Beehr & Franz, 1987), in this book we adopt the following conceptualizations:

* Stress: the overall transactional process
* Stressors: the events or properties of events (stimuli) that are encountered by individuals
* Strain: the individual’s psychological, physical, and behavioral responses to stressors
* Outcomes: the consequences of strain at both the individual and the organizational level

Stressors, therefore, are the antecedent conditions, and strain is the person’s response(s) to those conditions. We agree with Beehr that the term stress should be used not to describe specific elements of the transaction between the individual and his or her environment but rather to denote the overall process incorporating stressors, strains, and coping responses.

**Theoretical Models of Job-Related Stress**

 As early as 1970, McGrath (1987) urged researchers to approach the investigation of stress using theoretical models that would reflect the sequence of events in stress transactions as well as their interrelationships. The first step in determining how robust current models of work stress are in aiding our understanding of the stress process requires that we consider the context—the theoretical frameworks—out of which such models have emerged. These frameworks should provide not only a platform upon which research can be built but also a stimulus to research and theory building as we differentiate and elaborate the relevant constructs (Leventhal, 1997).

Much of the research on work stress has been carried out using an interactional framework, even though, as we will see later, attempts have been made to at least recognize within this context the dynamic-adaptational nature of stress. The issue here is the same as has already been discussed in relation to defining stress: that is, that the interactional perspective may not provide a sufficiently comprehensive framework to enable a full understanding of the stress process (Lazarus, 1990). Nevertheless, this approach has clearly been important in drawing attention to the separate constructs that play a significant role in understanding stress. Indeed, many of the studies described in this volume have been based upon this interactional perspective.

As outlined by Tetrick and LaRocco (1987), the work stress model that best characterizes the interactional framework postulates that the perceived presence of certain work conditions (see Chapter 2) may be associated with a number of stress responses (Chapter 3). This model also predicts that various organizational characteristics, situational factors, and individual differences can influence (moderate) this stimulus-response relationship (see Chapter 5). Generally, the model has resulted in three types of research applications (Dewe, 1991). These include (a) identifying, describing, and categorizing different stimuli; (b) demonstrating a relationship between the different categories of stimuli and responses; and (c) exploring the nature of that relationship by investigating the moderating effects of different organizational, job-specific, and individual-difference variables.

As we shall illustrate in later chapters, the information provided by the interactional approach on stress-related constructs is not in dispute. However, the model itself and the findings that have emerged from the model have exposed a number of limitations in its ability to explain the dynamic nature of the stress process, leading researchers to question its efficacy. Nor is there doubt that future frameworks, if they are to advance our understanding of stress, will need to focus on the sequence of events in addition to the relationship between stimuli and responses (Kaplan, 1996). This is not to say that the significance of the stress process has been ignored. However, the first priority for many researchers has been the identification of stressful work conditions and structures, along with determination of their relationship with different measures of strain, rather than exploration of the stress process itself (Duckworth, 1986).

Despite the above limitations, models of work stress have long contained elements of the stress process. Similarly, researchers have for some time accepted the transactional nature of stress, at least at the theoretical level, even though empirical research has predominantly been conducted from an interactional perspective. This state of affairs may well account for the observation of Lazarus (1991) that, although work stress researchers recognize the importance of process considerations, they continue to pay only “lip service to the most advanced theories about the stress process” (p. 2).

The aim of the discussion that follows is to briefly review a number of these models and to examine their contribution to our understanding of the stress process. Whether they can be categorized as “interactional” or “transactional” models is not of concern in the present context. Rather, we hope to illustrate the major thrust of each theory, the ways in which it has enhanced our knowledge of job-related stress, and whether it incorporates elements of the transactional nature of stress. Our selection of models is not exhaustive, but it does draw attention to a number of common features that reflect the domain within which work stress research takes place. Similarly, the intention here is not to engage in a detailed critique of these models but rather to consider the notion of P-E fit, which is either implicitly or explicitly common to most models of work stress, and to consider how far the notion of fit can be taken as embodying the “transactional” nature of the stress process.

Reviewers (e.g., Cummings & Cooper, 1979; Edwards & Cooper, 1988; Eulberg, Weekley, & Bhagat, 1988; Kahn & Byosiere, 1992) have identified a number of specific models that they believe have played an important role in developing the theoretical context for investigating work stress. These include McGrath’s (1976) stress cycle model, the P-E fit approach (French, Caplan, & Van Harrison, 1982), Karasek’s (1979) job demands-control model, the general systems approach of Cox and McKay (1981), and Cummings and Cooper’s (1979) cybernetic model for studying work stress. Kahn and Byosiere (1992) noted that there are several points of convergence among different frameworks, in particular the notion that stress entails a sequence of events that includes (a) the presence of a demand, (b) a set of evaluative processes through which that demand is perceived as significant and taxing in terms of its impact on individual resources or requiring from the individual something other than normal functioning, and (c) the generation of a response that typically affects the well-being of the individual.

Despite general consensus on the above issues, there is less than complete agreement about the conceptualization and measurement of even the most well-established and researched constructs, such as demands and responses. Where there is agreement, however, it is most likely to be along the lines that (a) demands and responses can now be understood only within the context of the evaluative processes that give significance and meaning to encounters; (b) it is through these processes that the individual and the environment are linked; (c) it is these processes that best express the relational-transactional nature of work stress; and (d) strain occurs when there is an imbalance between the demands of the encounter and the resources of the individual to manage those demands. Unfortunately, agreement on these points occurs mainly at the conceptual level, and there is considerable wrangling among researchers over how these evaluative processes should be defined and measured, how they should be incorporated into a work setting, and whether current methodologies can ever adequately capture their transactional qualities.

The idea of a sequence of events and the concept of “fit” can best be understood by considering the approaches adopted by the different models. McGrath (1976), for example, proposed a sequence of events where the demands of an encounter and its outcome(s) are linked through three processes: appraisal, decision making, and performance. The first of these (appraisal) concerns how the encounter is interpreted, the second (decision making) involves the selection of a response, and the third (performance) involves how well the encounter is managed. McGrath also referred to an “outcomes process,” which he described as the feedback mechanism through which the encounter is reappraised. In this model, “imbalance” or “misfit” occurs as a result of the individual’s appraisal of events and occurs when the consequences of not meeting the demands are perceived as being significant.

The P-E fit model of stress is perhaps the one that has been most widely discussed in the literature (Edwards, 1991; Edwards & Cooper, 1988; Eulberg et al., 1988). In brief, this model proposes that strain occurs when the relationship between the person and the environment is out of equilibrium. That is, a lack of fit between the characteristics of the person (e.g., abilities, values) and the environment (e.g., demands, supplies) can lead to unmet individual needs or unmet job demands. These unmet needs or demands can in turn result in strain. The main point is that subjective P-E misfit—that is, how individuals perceive the encounter—increases the likelihood that strain will occur. Implicit in the notion of misfit is the individual’s ability to manage an encounter, and elements like values, supplies, demands, and abilities, all of which help to determine the perceived misfit, could be described as representing aspects of a transactional process. The difficulty is that there is little in the way of empirical evidence to support this model, due to problems in clarifying the exact nature of misfit and appropriately measuring the constructs involved (Edwards & Cooper, 1988).

The job demands-control model (Karasek, 1979) is based on the proposition that the interaction between job demands and job control (referred to as job decision latitude, and defined in terms of decision authority and skill level) is the key to explaining strain-related outcomes. In this model, strain occurs when high job demands (or pressures) are combined with low decision latitude (a perceived inability to influence tasks and procedures at work). The concept of control has long been recognized as an important facet of the stress process. However, debate over how control should be operationalized and questions about how the interaction should best be measured have meant that attempts to replicate Karasek’s findings have generated mixed results (Fox, Dwyer, & Ganster, 1993). (Refer to Chapter 5 for further discussion of evidence concerning Karasek’s model and the role of control in stressor-strain relationships.)

In their general systems model of stress, Cox and McKay (1981) described strain as the psychological state that occurs when there is a personally significant imbalance or lack of fit between an individual’s perceptions of environmental demands and his or her ability to cope with those demands. According to these theorists, imbalance occurs via a five-stage sequence that includes the source of the demand, the perception of that demand in relation to coping resources, the recognition of changes in well-being, the evaluation of coping activities, and, finally, the feedback or reappraisal of the event. It is, as Cox (1993) suggested, useful to “think of stress as embedded in an on-going process which involves individuals interacting with their environment, making appraisals of that interaction and attempting to cope with, and sometimes failing to cope with, the problems that arise” (p. 18).

Whereas the Cox and McKay model is based on a general systems approach, the model offered by Cummings and Cooper (1979) is based on a cybernetic approach, which the authors believe is consistent with frameworks for investigation already being used by work stress researchers. The usefulness of a cybernetic framework lies, according to these authors, in the fact that it focuses on the stress cycle—“the sequential events that represent the continuous interaction between person and environment” (p. 415). The basic premise of this model is that behavior is directed toward reducing deviations from a specific goal state and that it involves (a) the detection of strain through the presence of a perceived mismatch between the person’s actual and preferred states; (b) the selection of an adjustment process; (c) the implementation of the adjustment process—that is, coping behaviors; and (d) the effect of those coping behaviors on the stressful encounter. Another advantage of the cybernetic framework is that it, like some of the other models, draws attention to the temporal nature of stressful encounters and hence the need to consider the impact of time on P-E transactions.

Other researchers (e.g., Beehr & Franz, 1987; Ivancevich & Matteson, 1980; Payne, Jick, & Burke, 1982) have also developed models that incorporate transactional elements. These models, like those discussed above, draw attention to a number of themes that may provide a common pathway for research and a better understanding of the stress process and its application to work settings. The first theme is that of a misfit, mismatch, or imbalance between the person and the environment. All of the above models are based upon a fundamental premise that strain occurs when there is a misfit, mismatch, or imbalance between the demands of the situation and the resources of the individual. The issue facing researchers is agreeing on what exactly the nature of that misfit is. Three factors are crucial: The misfit must be perceived (by the individual) as salient and significant, it must represent a threat to the person’s well-being, and it must require actions over and above normal functioning. One criticism that can be aimed at many of these models is that although they identify some of the structural components that precipitate a misfit, they frequently fail to identify those elements that characterize the nature of the misfit and that link the person and the environment.

Agreeing on the nature of that mismatch is important because it forces researchers to focus on process issues. More particularly, it shifts attention to the evaluative-appraisal process (Lazarus, 1990) that individuals undergo in determining the significance of an encounter (primary appraisal), along with its impact and what can be done to deal with it (secondary appraisal). Identification of the different aspects of the appraisal process provides the context for exploring the transactional nature of any encounter. Accepting the need to consider stress in transactional-process terms has dramatic consequences for stress measurement because it requires the development of a framework that directs research toward such questions as “How can we capture the changing person-environment relationship?” and “Where in this transaction is the stress of the stress process and what needs to be measured?” (Lazarus, 1990, p. 4). This approach requires consideration not only of how structural components of the appraisal process should be defined and measured, but also of the adequacy of contemporary measurement practices in capturing the transactional process itself.

**Stress: Third-Wave Epidemic or Scapegoat?**

Although the pervasiveness of references to stress in the popular media as well as in academic publications may help in drawing attention to the issues involved, some of the discussion and suggestions that have emerged have made it almost impossible at times to separate findings from fiction and research from anecdote, to the extent that to the casual observer it is questionable whether being under stress is any different from simply being alive. For those engaged in research, it is not difficult to identify a sense of frustration growing out of the fact that it always seems necessary to spend so much time defining stress when there are far more important issues to confront (Beehr & Franz, 1987). Some researchers have even contended that stress is too large a phenomenon and too all-encompassing to investigate (Schuler, 1980).

This has not deterred research interest in the phenomenon. However, it is also clear that the current level of interest and popularity that surrounds the idea of stress is not always helpful. Defining stress is not meant to be a tortuous academic exercise in semantics far removed from the “real world,” nor should it be viewed as some sort of initiation process that all researchers have to go through. Definitions provide a context, a sense of coherence, and a framework for understanding research findings. More importantly, as researchers we have a moral obligation to those whose working lives we wish to explore. This obligation requires that we give thought to how stress can best be defined so that research captures the reality of the stressful encounter and is relevant to and reflects the experience of those who are being researched. In short, to fail to give careful consideration to what we mean by stress may well trivialize encounters that “affect adversely the psychological well being of most persons exposed to them” (Brief & George, 1991, p. 16).

It is important to tread a middle ground, where stress is not regarded as causally linked to all ills and is not seen as the root cause of all social problems. When it does occur, however, stress can leave individuals emotionally drained and often more vulnerable to other illness and disease. The real issue is not whether there is too much or too little stress in people’s lives but how we can understand the stress process and its implications for the management of stress. The complexities involved in developing this understanding should not be oversimplified by inadequate consideration of what we are trying to research, nor should they be trivialized by exaggeration of the issues involved.

There is an extensive body of research working to redress this balance. Sophisticated techniques have been developed to obtain data on biochemical, neuroendocrine, and electrical systems of the body, and computer-based statistical analysis enables simultaneous investigation of many parameters and variables. As we shall discuss further in Chapter 9, researchers should now explore both the subjective and objective measurement of stress. Understanding the explanatory potential that resides in both types of methodologies would allow a more balanced approach to emerge that aims to establish the most appropriate methods for unraveling the stress process. Longitudinal analysis may also become a feature of future research. Continual refinement of traditional research methods and exploration of the utility of new methods will enable job stress researchers to evaluate the appropriateness of different methodologies for understanding and exploring the totality of the stress process.

**Emerging Themes in Stress Research**

How stress should be defined should by now be recognized as important. Definitions provide a framework for understanding why different approaches have been adopted, the results that have emerged, and, as knowledge has accumulated, their relative strengths and weaknesses and how future research may be directed. Contemporary definitions now point to the idea of a transaction where the emphasis is on identifying those processes that link the individual with the environment. This approach, though accepted at the theoretical level, has yet to receive a more complete treatment at the empirical level.

Adopting a transactional perspective means that no one variable can be said to be stress (as in the more traditional approach to defining stress) because, as Lazarus (1990) has articulated, stress “has been defined as a continually changing relationship between person and environment” (p. 4). This book draws attention to critical issues in the conceptualization, measurement, and understanding of job stress in the context of people’s working lives and their lives overall. In particular, when considering stress research, contemporary practice and procedures may need to be reviewed, taking into account the following issues.

***What is being measured***? Two questions stem from consideration of this issue. The first is, “Whose reality is being assessed?” and the second asks, “Do measures actually assess what they purport to?” By considering these questions, attention is drawn not just to how adequate current measures are in expressing the transactional nature of stress but also to whether existing methods can capture the complexities of the stress process. As we shall discuss later (see Chapter 8 in particular), there is a need to reflect on whether stress research has relied too heavily on psychometric assessments of measurement validity, perhaps at the expense of determining whether the measures actually reflect the reality and experience of those being asked to complete them. Following from this is the more complex (and perplexing!) question of how the stress process should be investigated.

***How appropriate are current methodologies?*** This, as will be discussed later, is not about whether one methodology is better than another but rather about what methods should be used to best capture the stress process. This issue inevitably requires some discussion of the roles of qualitative and quantitative methodologies. Here we need to consider two questions (which are raised again in Chapter 8): “Where are current methodologies taking us?” and “What can alternative methodologies provide?” (see Van Maanen, 1979). For instance, qualitative methods reflect a richness in their approach to data gathering and analysis and should be viewed as offering a number of insights into interpretation and understanding separate from those provided by quantitative methods. If a distinction is made between description (quantitative) and meaning (qualitative), then the convergence of both approaches offers a balance and draws on the strengths of both approaches to unravel the complexities of the stress process.

***What does all this mean in practice?*** Specifically, what are the measurement implications of considering stress research from a transactional perspective? This question can be answered in a number of different ways. At the construct level, there is a need to develop measures that capture important facets of the stress process and to ensure that all key facets of that process are assessed appropriately. At the systems level, the question is, “How can we capture the changing person-environment relationship?” (Lazarus, 1990, p. 4). Although we will address these two issues in more detail later, they are raised here to draw attention to the need for a two-phased strategy in stress research. Phase 1 entails getting the construct measurement right. Researchers should resist the temptation of wanting to measure the process before adequate consideration has been given to construct measurement. Phase 2 requires consideration of the role that a construct plays within a complex system that encompasses reciprocal causality and contains changing moderating and mediating relationships. This is a much more difficult task. In the following chapters, we reflect upon some of the critical issues involved.

In summary, adopting a transactional perspective requires reconsideration of traditional measurement practices and research designs. At the heart of the matter is the need for theory-based measurement (Lazarus, 1990) aimed at capturing the nature of the stress process itself. Researchers must acknowledge that this aim may be achieved only following a period of “quiet reconstruction” during which accepted traditions are critically examined in terms of how best they express that process. They must also consider how appropriate different methodologies are in describing the subtleties of the stress process. This consideration may differ depending on whether the focus of the research is at the construct or the systems level, whether the aim is to describe events or determine their meaning. Whatever the level of analysis, stress research can no longer stand apart from such issues if advances are to be made in our understanding of the stress process. With this view in mind, the remaining chapters are designed to stimulate thought about what needs to be done and how best that may be achieved.

We begin in Chapter 2 with a review of environmental factors that may function as sources of stress. As noted above, these variables are referred to as stressors, and it is important to be aware of the impact of various kinds of stressors on individuals in the workplace. Equally important, however, is an understanding of individuals’ reactions or responses to these stressors, which we discuss in Chapter 3. Following other theorists (e.g., Beehr and his colleagues), we refer to these reactions as strains. They represent the physiological, psychological, and behavioral response of individuals to threats upon their well-being. In Chapter 4, we outline the phenomenon of burnout, a special form of strain that has been studied particularly in relation to human service occupations, although in recent years it has also been investigated in other occupational groups. Factors that induce burnout and potential consequences of burnout are examined in this chapter.

Chapter 5 identifies several variables that may serve as either buffers (alleviators) or exacerbators of stressor-strain relationships. Job stress research has explored a number of these moderator variables, and in Chapter 5 we review the findings of this research and discuss mechanisms that may be responsible for moderator effects. We emphasize that a complete understanding of these effects can be obtained only if they are studied within the context of the transactional model of stress or strain relations.

In Chapters 6 and 7, we turn to the issue of stress management. Chapter 6 analyzes the stress-coping behaviors of individuals, again from the transactional perspective, and reviews research that has been conducted on the use and effectiveness of coping strategies. Chapter 7 is based on the premise that organizations share the responsibility for stress management and that interventions at the organizational level may be needed to address the effects of certain kinds of stressors, especially those over which individuals may have little control. Methodologies for evaluating the effectiveness of stress management interventions are discussed in this chapter.

Chapter 8 focuses attention on a range of methodological issues that confront researchers of job-related stress. We review various research designs, their strengths and limitations, and examine whether existing methodologies are capable of providing a satisfactory assessment of the stress-coping process as it is represented within the transactional framework. In this chapter, we also raise suggestions on how the outcomes of job stress research may be optimized.

The final chapter in this volume, entitled “The Changing Nature of Work,” reflects upon the ever-changing context in which individuals function, in particular how technological, environmental, economic, political, and sociocultural forces shape the way in which work arrangements (and hence jobs) are being restructured. Here we posit that changes in workplace environments have tended to be dominated by technological and economic imperatives and that there is a need for greater application of perspectives that also emphasize psychological and sociocultural dimensions of work experiences. Ultimately, the design and maintenance of workplace environments that enhance individual well-being, as well as contribute to organizational productivity, is a major challenge that confronts practitioners and researchers alike.

We hope that this volume, and the issues explored within it, will stimulate debate and discussion among the community of stress researchers. Job stress research is embarking upon an exciting period in its history as we move into a century that promises to open up new, and perhaps very different, workplace arrangements. We do not purport to hold all the answers—rather, our aim is to raise some significant questions about research in this field and to challenge researchers to reflect upon their theories, frameworks, and empirical activities.

**Chapter 3**

**Assessing Job-Related Strains**

In this chapter, we discuss the assessment of strain—that is, the individual’s physical, psychological, and behavioral responses to stressors—and we review the large array of measures that have been used to capture workplace strains. As noted in Chapter 1, strain may be conceptualized as a dependent variable (a response to disturbing or threatening stimuli) and may cover a range of manifestations. The variety and scope of strain measures may stem from the fact that the common expression “being under stress” illustrates that at times virtually any response may be seen as reflecting strain. In addition, because individuals respond in many different ways, a variety of different responses have been treated by researchers as indicators of strain. The aim of this chapter is to examine these strain indicators and to consider the implications of such measures for job stress research.

**Classifying Strain**

 It is possible to identify a generally accepted approach to classifying manifestations of strain. Most reviews of stress (see, e.g., Kahn & Byosiere, 1992) distinguish between three major categories of possible stress responses or strains: physiological, psychological, and behavioral. Each of the three categories will be discussed in turn. Our aim is to draw attention to the range of measures used, to explore difficulties associated with each of the three categories, and to raise issues that may help to clarify stressor-strain relationships. We begin with an overview of physiological indicators.

**Physiological Strain**

Kahn and Byosiere (1992) suggested that the assessment of physiological strain in job stress research is relatively rare. To confirm this, we conducted a literature search of the Psychological Abstracts and ABI databases, entering the key words physiological/psychosocial strain and work stress. This search revealed only 15 references, a number that increased to just over 100 when the more general term stress was used. Nevertheless, studies of job-related stress are moving increasingly from total reliance on self-report measures of (psychological) strain toward measures that include some form of psychophysiological assessment (McLaren, 1997). The fact that work stress researchers have only recently begun to explore the utility of physiological responses does not mean that such measures have been regarded as unimportant. Rather, most job stress research has been psychologically based; hence, there has been an emphasis on the measurement of psychological, rather than physiological, strains (Jex & Beehr, 1991).

Two reviews (Fried, Rowland, & Ferris, 1984; Jex & Beehr, 1991) provide an overview of the types and nature of physiological measures used in job stress research. From their review, Fried et al. (1984) concluded that, in general, research has focused on three types of physiological indicators: cardiovascular symptoms, biochemical symptoms, and gastrointestinal symptoms. Their analysis of 47 studies revealed that the most popular measures were heart rate and blood pressure. Taking into account that 24 of these studies incorporated more than one physiological index, 60.2% measured cardiovascular symptoms (blood pressure, cardiac activity, and cholesterol), 30.7% measured biochemical symptoms (especially catecholamines, cortisol, and uric acid), and 9% measured gastrointestinal symptoms (particularly peptic ulcers).

Jex and Beehr (1991) adopted a similar approach to categorization, although they used headings such as “physiological measures believed to be associated with disease” and “actual disease conditions.” Their first category of strains contained the three types of response mentioned above (cardiovascular, biochemical, and gastrointestinal), and their second category was concerned with conditions or behaviors that are closely related to disease conditions, including both direct relationships between work conditions and disease (e.g., cancer, stroke, diabetes) and indirect relationships (e.g., cigarette smoking). Because many of the findings are open to alternative interpretations, it is not possible to draw firm conclusions from this line of research. However, the interesting conclusion to emerge from Jex and Beehr’s review was that the most common approach for collecting physiological data simply involved asking people about their health or health-related behaviors. This entailed either asking individuals to indicate what specific symptoms they had experienced at work and whether they had sought medical advice for these symptoms or getting them to complete a symptoms checklist. Evidence suggests that self-report measures of physical symptoms are related to a variety of work stressors, although the size of the relationship is not high (Jex & Beehr, 1991).

It is important to note at this stage the program of work carried out by Ganster and his colleagues (Fox, Dwyer, & Ganster, 1993; Schaubroeck & Ganster, 1993). This work is significant for a number of reasons, not the least of which is that the authors thoughtfully and carefully developed their approach to exploring the relationship between job demands and physiological outcomes, making use at times of both subjective and objective measures. Schaubroeck and Ganster (1993) concluded that “occupational demands, which have not previously been addressed in studies of degeneration of autonomic responsivity due to conditioning from chronic exposures, should be examined seriously in the literature” (p. 84). Fox et al. (1993) concluded that their study “provides perhaps the clearest evidence yet that some medically meaningful outcomes [blood pressure; cortisol scores] are best explained by the joint effects of job demands and individual control beliefs” (p. 307). Although the use of physiological measures is challenging enough for researchers, it offers, as these researchers point out, a causal pathway with profound explanatory potential.

Work stress researchers are seldom forced to choose between objective (physiological) and subjective (self-report) measures of strain. However, they are frequently led to believe that direct physiological measures, because they are independent of individual perceptions, are more “objective” and hence that they are superior to self-report measures and result in fewer confounding factors. Jex and Beehr (1991), however, commented that “one of the most pressing issues in this area is to find more reliable ways to measure these physiological indicators within the context of occupational stress research” (p. 337). Fried et al. (1984) argued that three factors may affect the reliability of physiological measures and hence need to be controlled:

1. Stable or permanent factors (e.g., differences between individuals in their vulnerability to certain physiological symptoms, including age, gender, diet, genetic tendency)
2. Transitory factors (e.g., time- and context-specific conditions, including such factors as temperature, time of day, physical exertion, and substance consumption)
3. Procedural factors (e.g., the number of times measures are taken and the amount of time elapsing between measures)

The conclusions that can be drawn from reviewing physiological responses to job-related stressors suggest that this field represents an intriguing area for future research. However, it is clear that researchers must give due consideration to the above factors so that the measurement of physiological indicators can become more standardized and consistent (Fried et al., 1984). Furthermore, longitudinal studies are needed to clarify directions of causality and to unravel complex interrelationships over time (Kahn & Byosiere, 1992). Finally, as noted later, different stressors may be quite specific in terms of the strain they produce. If that is the case, the reliability of research findings will be improved by paying more attention to the nature of the stressor. For instance, as Fried et al. (1984) suggested, the type of physiological strain produced by an acute (episodic) stressor may be quite different from that produced by stressors that are more ongoing (chronic).

Failure to distinguish between different types of stressors may lead to the conclusion that some stressors have nonsignificant effects when in reality they produce a highly specific type of strain that has not been measured because little attention has been given to the nature of the stressor-strain relationship being investigated. Also, some stressors may induce a physiological reaction at a future point in time rather than immediately. Rather than assessing certain types of strain simply because they fall into recognized categories or have been examined in previous studies of job stress, researchers should give as much thought to selection of an appropriate strain index as they have to identifying and exploring the nature and characteristics of the stressors themselves. In short, there needs to be careful consideration of the particular reactions (strains) that would be anticipated in response to specific stressors.

Finally, measurement reliability may be improved by using both objective and subjective indexes of physical strain. This would enable a comparison of the results from different measures, as well as an opportunity to explore the relationship between the two and a more comprehensive account that would enhance the appropriateness of interventions (Kahn & Byosiere, 1992). Objective and subjective measures both play an important role in the assessment of strain, and researchers should “aim to design a ‘test battery’ approach to the study of stress so that a greater picture can be obtained and more powerful predictive relationships achieved” (Travers & Cooper, 1994, p. 145).

**Psychological Strain**

As noted earlier, psychological strains resulting from job stressors are the most commonly studied (Jex & Beehr, 1991; Kahn & Byosiere, 1992). This does not mean that these manifestations of strain are necessarily the primary or the most frequent reactions to work stressors. It more likely reflects the fact that most job stress researchers have a background in psychology and are perhaps more familiar with this type of measurement (Jex & Beehr, 1991). Furthermore, many measures of psychological strain have been used, but only a few have been used consistently (Kahn & Byosiere, 1992). Interestingly, the most frequently used measure has been job dissatisfaction. This raises questions about how best to measure job dissatisfaction and, more importantly, whether job satisfaction is important to the individual and hence whether feelings of dissatisfaction actually have a significant impact on that person’s well-being (Brief & Atieh, 1987).

Research reviews have revealed that, however they are conceptualized and assessed, psychological strains are strong correlates of work-related stressors (Jackson & Schuler, 1985; Jex & Beehr, 1991; Kahn & Byosiere, 1992). Two issues are of interest here: (a) whether any patterns can be identified in the number and types of strain measures used in research and (b) the extent of conceptual overlap between these measures (Kahn & Byosiere, 1992). The reviews noted above clearly illustrate that the two most frequently used psychological measures are job dissatisfaction and tension/anxiety. However, numerous other psychological indicators have also been adopted in job-stress research. For example, of the 96 studies identified by Jackson and Schuler (1985) in their review of the effects of role ambiguity and role conflict, 14 different measures of strain were used, of which 11 could be classified as psychological strains (Jex & Beehr, 1991). The three other strain measures assessed behavioral and performance factors. Of the psychological strains, job dissatisfaction was reported in 43 studies (just under 50%) and tension/anxiety in 22 studies (about 25%). Jackson and Schuler further classified measures of job dissatisfaction into six subcategories: general dissatisfaction, and dissatisfaction with supervision, work, coworkers, pay, and promotion. Other variables included as indexes of strain in the studies reviewed by Jackson and Schuler were organizational commitment, job involvement, propensity to leave, and absence.

Similar findings emerged from the review by Kahn and Byosiere (1992), who identified 43 different measures of psychological strain in 100 studies, once more illustrating a considerable range of approaches toward the assessment of strain. (Dissatisfaction with the job, life, and workload were most frequently used, in 24.5% of the studies.) Given that Kahn and Byosiere argued that their review of empirical research in this field was not exhaustive, the amount of methodological variation between studies is even more remarkable. The types of strains that were assessed in the research they reviewed included the following:

* Health, whether general, mental or physical, or from the job, including somatic complaints, illness, vigor, health problems, and physical symptoms (used in 16.3% of the studies)
* Anxiety/tension (15.4%)
* Strain—either general, physical, psychological, emotional, or from the job (10.0%)
* Boredom, fatigue, tedium, depersonalization, emotional exhaustion, and overall burnout (9.0%)
* Emotions, including confusion, irritation, resentment, emotional arousal, and alienation (8.1%)
* Depression (8.1%)
* Others—self-confidence, self-esteem, sexual maladjustment, and turnover intent (13.3%)

It is clear from the range of measures used that it would be possible to further categorize them according to those that are acute or chronic, those that capture states of intense arousal, and those that focus on underarousal or understimulation. It is also possible to identify specific feelings as well as those that are nonspecific and more general. Finally, the above list contains responses that are indicative of some feeling or illness, of a purported intention or feeling, and even of a particular behavior or a consequence of behavior (Kahn & Byosiere, 1992). All have been measured by way of self-report.

Two observations are pertinent at this juncture. First, there seems to be a degree of flexibility and looseness in the way in which the term psychological strain has been applied in job stress research. As noted earlier, it would appear that virtually any (negative) reaction to stressors has been interpreted as an indicator of strain—a finding that highlights a lack of conceptual differentiation. To some extent, the conceptual overlap between measures has been accentuated by the predominant reliance solely on self-report techniques. Although these have an important function in the assessment of psychological strain, future research needs to more clearly define the roles of different strain indicators, rather than assuming their functional equivalence.

More importantly, however, the issue of measure appropriateness has rarely been addressed in research on job stress. Although Kahn and Byosiere (1992) concluded that “the psychological effects of work stress have been plausibly established” and that psychological strains are “real, painful and costly” (p. 608), greater attention needs to be given to the relevance of each variable for individual well-being. The above reviews illustrate that it has been all too easy for researchers to quite legitimately select any one of a range of variables simply because “being under stress” can be measured in so many different ways. For example, as discussed previously, dissatisfaction with the job (or aspects of the employment relationship) may have differential impact on individuals who vary in terms of work or job involvement. Job dissatisfaction would be predicted to be more salient for individual well-being when the job is central to a person’s self-concept and self-esteem than when the job is peripheral (Frone, Russell, & Cooper, 1995). In sum, researchers should give more careful consideration to the nature of the stressor-strain relationships that they are seeking to explore and hence the type(s) of strain that may be induced by those relationships, as well as the subjective meaning and importance of various strain indicators to the individuals under investigation. To make an informed judgment when selecting strain measures, it is also important to consider the context in which the stressor-strain process unfolds. As well as taking into account the psychometric properties of different measures of psychological strain, researchers must conceptualize the types of strain that are anticipated to occur in the particular context and must select measures of strain that better match the type of work event under consideration.

**Behavioral Strain**

Behavioral responses to work stressors are the least studied of all forms of strain (Briner, 1995a; Jex & Beehr, 1991; Kahn & Byosiere, 1992). As Jex and Beehr (1991) pointed out, this is “ironic since, at least from an organizational point of view, these may be the most important” (p. 337). Furthermore, behavioral responses “impose substantial costs on work organizations,” and “their effects are manifest both on the job and away from it” (Kahn & Byosiere, 1992, p. 610).

Behavioral strain has been examined in a number of different but not mutually exclusive ways. Jex and Beehr (1991), for example, reviewed 17 studies and divided behavioral responses into two broad categories. The first category included those of significance to the organization (responses that have a direct impact on organizational functioning, including such behaviors as job performance, turnover, and absenteeism). The second set covered those of significance to the individual (including use of alcohol, smoking, other substance use, and destructive behaviors). Of the 14 response measures described by Jackson and Schuler (1985), 4 could be classified as behavioral measures. These 4 were used in 22.1% of the studies reviewed and were divided into objective measures (e.g., absenteeism and financial data such as sales volume and profit levels) and self-report measures (e.g., self-ratings of performance and ratings by others).

Kahn and Byosiere’s (1992) review identified 15 behavioral responses, which they classified into five groups. It would be possible to describe three of these groups as “work focused” or “organization focused.” Kahn and Byosiere labeled these behaviors as work role disruptions (e.g., performance levels, mistakes, errors and accidents, and substance taking at work), job flight (e.g., turnover, absenteeism, early retirement, and strikes) and aggressive behavior at work (e.g., vandalism, stealing, rumor spreading, and counterproductive activities). The final two categories developed by Kahn and Byosiere covered individual-focused behaviors and included disruptions to nonworking life (e.g., marital, friendship, and community difficulties) and self-damaging behaviors (e.g., substance use and accidents).

Caution needs to be exercised in the interpretation of the above categories because simply identifying and assessing behavioral responses does not necessarily mean that they were caused by work-related stressors. They may, for instance, be the result of other factors operating in an individual’s life, including off-the-job stressors and even dispositional tendencies (see Chapter 3). Second, research on behavioral indicators of strain has been described as being of “limited value” (Briner, 1995a, p. 4) because it is based largely on self-reports and cross-sectional designs and because it generally fails to capture the presumed complexity of the stressor-strain relationship. Again, it seems that the most common approach when collecting behavioral data simply involves asking people to describe their responses, rather than collecting other (perhaps more objective) behavioral observations.

There is considerable agreement among reviewers on the state of current research and what has to be done. For example, it is widely accepted that unreliable performance measures can only result in wrong conclusions and make it impossible to obtain supportive evidence of stressor-strain relationships (Jackson & Schuler, 1985). There is also recognition that individuals will resist reporting antisocial behaviors because of the consequences that may flow from admitting such behaviors (Kahn & Byosiere, 1992) and that such resistance has implications for using behavioral indicators of strain. Finally, the relationship between potentially stressful events (stressors) and behavior is complex; understanding this relationship entails unraveling the process through which different variables are linked (Jex & Beehr, 1991). At the very least, it is necessary to determine whether a direct relationship can be assumed (e.g., work overload causes absence from work) or whether the causal pathway between stressors and strains is always mediated by some affective state (e.g., workload causes anxiety, which in turn causes absence).

Clearly, there is much to be done to increase our knowledge of the behavioral manifestations of job-related strain. As with psychological indicators, research on behavioral strain has tended not to differentiate between behavioral responses toward various workplace stressors, and there has also been a proclivity to assume causal mechanisms without explicitly testing their validity. Nevertheless, as we shall see in later chapters, recent research has begun to explore the utility of behavioral measures of strain, along with the extreme manifestation of strain known as burnout (see Chapter 4), and to illustrate their relevance in the investigation of stress processes in organizations.

**What About Emotions?**

In their review of the role of emotions in work and achievement, Pekrun and Frese (1992) concluded that, at least in the organizational psychology literature, “there is little research that speaks directly to the issue of work and emotions” and that “industrial and organizational psychology ought to take the issue of emotions at work more seriously” (p. 153). Given that models of stress are essentially theories about emotional reactions (Lazarus, 1993) and that “stress constitutes an emotional subset referring largely to emotions that are distress related” (Lazarus, 1995, p. 183), the lack of explicit attention to emotions in job stress research is disconcerting. Earlier, we referred to emotions like confusion, anxiety, irritation, and resentment under the heading of psychological responses. However, despite the inclusion of these variables as potential indicators of psychological strain, there is a lack of systematic treatment of the general construct of emotion within the job stress framework and, more specifically, the role that emotions play in the stress-coping process.

Several reasons have been posited for the absence of an integrated model of emotions in job stress research (see, e.g., Briner, 1995b; Wright & Doherty, 1998). One is that there is frequently a confounding of emotions and attitudes. The confusion of these constructs is well illustrated by Wright and Doherty (1998), using job satisfaction as an example. Their argument is that, in a search for the happy and productive worker, happiness (an emotion) becomes synonymous with job satisfaction (an attitude). Although there is an affective component to job satisfaction, and evidence of a linkage between people’s evaluations of their job and their overall happiness (Diener, Suh, Lucas, & Smith, 1999), researchers should nevertheless treat these as separate constructs that function at different levels of specificity, rather than regarding job satisfaction as a surrogate measure of emotional well-being.

Another reason why emotions have received less recognition in job stress research follows from the generally held belief that organizational behavior can best be explained primarily in rational-cognitive terms (Wright & Doherty, 1998). This “myth of rationality,” based around the goal-directed nature of most organizational behavior theory, has “encouraged the view that emotions have little to do with, and even get in the way of, the proper legitimate, and highly successful businesslike business of work” (Briner, 1995b, p. 3). Also, as Briner suggested, emotions may simply be more difficult to study than attitudes and other responses.

As we have discussed, however, emotional constructs are important, even critical, to investigate in research on job stress. Pekrun and Frese (1992) have argued that “emotions are among the primary determinants of behavior at work . . . and profoundly influence both the social climate and the productivity of companies and organizations” (p. 154). Similarly, because paid employment occupies a significant portion of most people’s lives, and because individuals experience a range of emotions within the employment context, efforts to understand and predict human behavior in organizational settings would be incomplete without attention to this domain. In addition, Hochschild’s (1983) work on emotional labor in service organizations—that is, the expectation that individuals at work will display certain appropriate, organizationally desired emotions—further illustrates the importance of the emotional dimension. Organizational prescriptions give rise to what has been described (see Ashforth & Humphrey, 1993; Briner, 1995b; Rafaeli & Sutton, 1987) as display rules (emotions that are expected to be expressed) and feeling rules (what should be felt when confronted with different events). Put simply, in any work setting there may well be emotions that ought to be expressed, and these may be distinct from emotions that are expressed. Being required to display “appropriate” emotions, and therefore perhaps being constrained from expressing an emotion actually felt, may in itself generate psychological strain.

In sum, as Lazarus (1995) has made clear, emotions offer a rich and useful source of information about what is happening to a person. Exploring emotional processes in work settings would increase our knowledge and understanding of the transaction between the individual and the environment. At one level, this entails unraveling the emotional process so that we gain an understanding of the meaning behind the emotion (Lazarus, 1993), in much the same way as understanding why an event is stressful (primary appraisal) has enhanced conceptualizations of the coping process. At another level, it also involves exploring whether certain work events are more likely to be associated with specific emotions, and under what circumstances emotions are a moderating factor operating between stressors and strains (Briner, 1995a; see also Chapter 6 of this book).

An important step toward understanding how emotions function in work settings is to classify them into meaningful categories. Lazarus (1995), for instance, suggested that it is possible to identify 15 different emotions that can be grouped together under three headings: negative emotions (anger, fright, anxiety, guilt, shame, sadness, envy, jealousy, disgust), positive emotions (happiness, pride, relief, love), and those that may best be described as mixed (hope, compassion, gratitude). Pekrun and Frese (1992) agreed that classifying emotions according to some common underlying dimensions has considerable merit. They also argued, however, that in a work situation this type of classification may not go far enough because it does not take account of the fact that particular aspects of the job may arouse specific emotions.

Pekrun and Frese developed a schema for classifying workplace emotions into discrete categories of emotion. Their approach begins by ordering emotions into those that are positive and those that are negative. These two categories are then divided into task-related and social emotions. Task-related emotions are further divided into process (doing the task), prospective (anticipating outcomes or consequences), and retrospective (evaluating accomplishments). Social emotions are those that reflect the social context within which the job is performed. Each of these different categories has both positive and negative emotions associated with it. For example, among prospective task-related emotions, hope would be positive and anxiety negative.

The approaches advocated by Lazarus and by Pekrun and Frese should not be seen as being in competition with each other. Both reflect efforts to provide structure to a field of study that has received limited attention from job stress researchers. Another approach (Rafaeli & Sutton, 1987) is to focus on those emotions displayed in satisfying role expectations and to classify these emotions according to whether they are positive or negative, and esteem enhancing or esteem degrading. Irrespective of how different schemas for classifying emotions are constructed, it is clear that the role of emotions in the stress-coping process and the management of job-related stress requires more systematic attention than it has received to date.

**Conclusion**

Despite the large number of physiological, psychological, and behavioral measures available, researchers have paid only moderate attention to delineating the strain side of stress transactions. A main reason for this is that “being under stress” has a wide variety of meanings, and to some extent almost any negative reaction could be considered as “strain.” To advance our understanding of work-related stress, it is time to consider the context within which different measures are being used and whether what is assessed captures the essence of the encounter being experienced. These are issues to reflect upon in Chapter 4, where we discuss burnout, an extreme form of job-related strain, and in Chapter 5, where we examine moderators of stressor-strain relationships.

One major theme emerging from a review of empirical work in this field is that researchers must consider the appropriateness of the type(s) of strain being measured and should specify which strains might be anticipated in different contexts, rather than simply selecting a strain on the basis that it can be classified as one or another form of strain. Focusing more attention on the nature of the person-environment transaction and, in particular, the nature of events confronted by individuals in their work setting would enable researchers to develop more coherent (and comprehensive) theories concerning the linkages between encounters and anticipated strains. It is necessary to move, as Kahn and Byosiere (1992) have, from generic categories of strains to more detailed descriptions that identify whether, for example, strains are acute or chronic, whether they reflect over- or understimulation, and whether they reflect general or more specific feelings.

The issue of “fit” between stressors and strains also means that researchers must take into account the conceptual overlap between measures of stressors and strain, conducting research that probes the meaning of these measures (to respondents), along with their construct and discriminant validity. This type of research would generate a clearer understanding of the nature of, and distinctions between, stressor and strain variables, as well as providing a framework for determining the appropriateness of strain measures. As suggested by Travers and Cooper (1994), a test battery approach, including behavioral, physiological, and psychological indicators of strain, has considerable merit in the context of job stress investigations. Similarly, inclusion of multiple “outcomes” in job stress research would enable researchers to explore the range of effects that a particular stressor, or set of stressors, might induce, and it would go some way toward addressing the criticism that job stress research has often adopted too narrow a focus when it comes to measuring strains in the workplace (Newton, 1989).

It is not just a question of “fit” between stressors and strain. There is also the question of the relationship across different types of strain. Research exploring the relationship between different strains may well begin to push us toward considering them in terms of notions like risk factors and whether the experience of one strain may make individuals more vulnerable to other types of strain. For example, what are the long-term consequences of job dissatisfaction? Would having a clearer understanding of this help to clarify its impact on health and well-being and provide a context for considering its role as a likely risk factor, thus enabling researchers to reevaluate the significance of such a measure? As our understanding of the stressor-strain relationship improves, it may be time to consider the role of different strain measures and the utility of thinking of them more in terms of notions like risk, vulnerability, and health, in much the same way as we have applied terms like chronic and episodic to stressors. This type of research would certainly require a test battery approach involving the careful selection of measures, the use of both psychological and physiological measures, and the use of methods like structural equation modeling and longitudinal design.

A further issue to consider is the significance or importance to research participants themselves of some of the variables currently designated as strains in job stress investigations. For instance, earlier we referred to the frequent inclusion of job dissatisfaction as a strain variable without first determining whether the job occupies an important niche in the individual’s self-concept and hence whether dissatisfaction in this domain has any significant bearing on the person’s overall well-being (see Brief & George, 1991). Similarly, more research is needed on the conditions under which environmental events are perceived as positive challenges versus negative stressors and on when a challenge becomes a stressor. For example, one of the most frequently studied organizational stressors is role ambiguity, which has been found in numerous studies to be positively correlated with a variety of strain variables (see Chapter 3). Despite this pervasive finding, however, there are circumstances in which a certain degree of ambiguity might be valued by individuals, especially those whose tolerance for uncertainty is high (O’Driscoll & Beehr, 2000). This suggests that, rather than assuming that variables such as role ambiguity have uniformly negative impact on people, stress researchers should further investigate the situational and personal moderators of the ambiguity-strain relationship and spend more time exploring the process by which ambiguity and other stressors influence individual well-being, not just the magnitude of the correlation between stressors and strains.

As we have illustrated earlier, the role of emotions in workplace stress needs more systematic attention from researchers. Two conclusions clearly emerge from a review of the organizational behavior literature: (a) Emotions are fundamental to an understanding of stress, as well as other responses; and (b) our knowledge of their functioning in work settings is extremely limited (Wright & Doherty, 1998). From a research perspective, this means that it is imperative to “understand real-time feelings and emotions, rather than the abstract and non-specific ratings gathered in studies of stress and satisfaction” (Briner, 1995a, p. 12). Identifying the meaning of emotions to individuals, specifying the links between specific emotions and environmental events, and delineating the conditions under which particular emotions function as moderators of stressor-strain relationships are high-priority issues for future investigations of job-related stress. As an extension to these suggestions, it would be valuable for researchers to explore the emotional costs associated with work, including what Fineman (1995) has referred to as the consequences of explicit feeling rules—“the impact on the individual when the tension between inner feelings and required emotions becomes too great” (p. 129)—and implicit feeling rules—adapting “required feelings” so that they are better managed, and having to deal with the emotional cost of that adaptation.

Finally, there is the issue of objective or subjective measurement. This is not simply an issue of replacing one set of measures by another. The consensus seems to be that more research is needed “in order to determine the quality of measures, regardless of whether they are self report or not” (Jex & Beehr, 1991, p. 352; see also Travers & Cooper, 1994). Strain measures need to be evaluated on their own merits. The empirical evidence presented by Jex and Beehr (1991, pp. 350-352) suggests that although common-method variance may be a problem with self-report measures of strain, that in itself is not a basis to dismiss all such measures or the relationships they produce. The message that we should take from the objective-subjective debate is that each method comes with its own set of difficulties and that consequently measurement should be taken seriously. Irrespective of the measurement approach, problems will always emerge from measures that are poorly developed or not well understood. Therefore, researchers are faced with two priorities. The first is to focus on issues of measurement exploring scale properties to establish their psychometric properties, what such scales are measuring, and the relationship between different measures. The second priority is to take the test battery idea discussed by Travers and Cooper (1994) and further explore the relationships between objective and subjective measures, their predictive abilities, and the utility of juxtaposing objective and subjective methodologies.

The issues raised in this chapter are no different from those presented in other chapters in this book. They all require that researchers give careful consideration to the context within which job stress encounters take place, particularly the processes that link different components. They also require new and innovative ways of thinking about what is being measured, whether measures capture the essence of the variable under investigation, and the meaning behind the measures. In this way, new directions can be identified, creative measurement strategies can be put in place, and research will make a constructive contribution to the creation and maintenance of healthy work environments.