We have briefly reviewed some of the ways in which social and political factors affect the quality and our use of our material environment. In previous chapters, we looked at physical determinants of health and at their social contexts. Here we examine other ways our bodies are affected less visibly, but perhaps more directly, by social relationships and structures. In this chapter and the next, we focus on the issue of sociopsychological stress and health. Stress and related concepts provide the basis for a holistic perspective in which individual minds and bodies are integrally interrelated with social environments.

"STICKS AND STONES MAY BREAK MY BONES, AND NAMES CAN ALSO HURT ME"

In everyday life, we are sometimes aware that sociopsychological factors affect our health. We might say, "I always get a cold after a tough exam." Conversations contain various psychosomatic references such as, "You're a pain in the neck!" "She'll be the death of me yet!" "Grandma died of a broken heart!" These references show a commonsense awareness of the connections among the mind, body, and society. Particularly among middle-class persons, there appears to be a recent increase in self-consciousness about bodies and stress.

Despite this recent interest in mind-body relationships, psychological and social factors are not perceived to be truly important in determining health because they are not "real," that is, countable and tangible. Viruses, radiation, chemicals, and smoking are physical factors whose effects on the body can be measured and observed. Because medical science has viewed mind and body as separate entities to be studied and treated separately, doctors often do not assign these factors much reality or tangibility. Thus, although we may intuit the reality of psychosomatic connections, we also believe that "sticks and stones may break my bones, but words will never hurt me" (at least not physically!). Yet is this adage really true?

Some evidence suggests that a conversation with another person (even a nonthreatening one) will automatically raise our blood pressure; a conversation with our boss, even more so (Lynch, 1985; Lynch and Rosch, 1990). What are we to make of accounts of "voodoo death," when a chieftain utters a death curse at a woman who violates a tribal taboo, and the woman, who believes her death to be inevitable, soon dies of no clear physical causes (Cannon, 1942)?

1In fact, studies show that immunity to disease among medical students is lower than usual during finals (Kiecolt-Glaser and Glaser, 1991).

2Other mechanisms may be involved in voodoo death besides being scared to death. For example, other people, such as relatives, friends, and neighbors, withdraw their emotional support from the victim. Funeral rites may be carried out while the person is still alive, thus symbolically defining the individual as dead. (This has been called social death.) However, there may also be a withdrawal of material support. The literature on voodoo death differs on how the process works. Some argue that dehydration (loss of body fluids) is a vital factor. Relatives may withhold water, and the victim, believing he is doomed, loses the desire to drink or obtain water (Eastwell, 1982). Thus, according to some, voodoo death has mainly physical causes, with psychological causes being secondary. Others argue that although physical causes are important, psychologically giving up on life produces lethal physical consequences (such as cardiac arrhythmia). Some laboratory evidence indicates that animals who give up live because their physiological systems have been depressed to a point of death (McElroy and Townsend, 1985).
equivalents of voodoo death occur in such cases as sudden death after retirement or widowhood. Engel (1971) argued that such phenomena are due to intense emotional arousal, which interrupts the regular rhythm of the heart; in other words, it causes a cardiac arrhythmia that can be deadly. We do not wish to overstate the case that words can kill, but we do want to make the point, developed further later, that human physiology is responsive to its social environment and symbolic meanings can physically affect us.

**Placebos: A Case of Mind or Body?**

Research on placebos provides some suggestive linkages between mind and body. A placebo is a chemically inert or inactive substance (for example, a sugar pill) that looks like real medication. It is a sham treatment that is supposed to have no actual physical effects. The Latin word *placebo* means "I will please." Doctors sometimes give placebos to patients who want and expect treatment yet seem to have no physical, organic basis to their complaints. Placebos are also used in tests of drugs and treatments to determine how much of a drug's effectiveness is due to its specific physical properties and how much is due to subjective or psychological factors. The placebo is used as a standard (or a control) against which a drug being tested can be compared.

Although chemically inert, placebo "pain medication" can actually reduce pain in as many as 35 percent of patients (Beecher, 1959). In the late 1950s, there was even a controversial experiment with placebo surgery. (Recent stricter rules for experiments with human subjects prohibit such experiments.) It was found that an early version of coronary bypass surgery (called mammary artery ligating surgery) was no more effective than sham surgery, in which patients were put to sleep and had an incision made, although no actual surgery was performed on the heart arteries (Cobb et al., 1959). Some observers have suggested that current coronary bypass surgery may likewise derive part of its success from a placebo effect. Many bypass patients experience considerable relief, even though their surgery produced no working grafts (that is, surgery did not improve ventricular function). The operation's symbolic and metaphorical effects may thus account for much of the patients' relief from angina pain (Moerman, 1997). Because patients usually hope that treatment will work, almost all treatments involve an element of the placebo effect. Medical settings—with their impressive equipment, diplomas and certificates on doctors' office walls, white uniforms, clipboards, and stethoscopes—contribute to this faith or expectancy. Even the color of placebo "medication" can increase its effectiveness. Placebo effectiveness varies, depending on the condition being treated. Cultural factors (such as the meaning of a condition or symbolism of a treatment) often influence how well a placebo works (Moerman, 2000).

Some researchers view the placebo effect as being all in the mind, with no physical basis. Others suggest that placebos actually induce internal physical changes in the body (Bakal, 1979; Cousins, 1989; Eisenberg et al., 1993a; Horwitz et al., 1990; Weil, 1988). For instance, placebos may stimulate the body's production of natural opiates, called endorphins (Davis, 1984; Levine et al., 1978). If this is true, it may be an oversimplification to consider the pain-relieving properties of a placebo merely psychological. Doctors' bedside manner, or communication, may likewise have concrete physical effects, such as reducing pain or speeding recovery (see Moerman, 2000). As one physician notes,

But what if it is demonstrated in the future that reassurance provided by a health professional is capable of releasing endogenous morphine-like substances within a patient's brain? Without doubt, the phrase "laying on of hands" will acquire a new meaning. (Bakal, 1979: 251)

The Western assumption of a division between mind and body is not shared by all cultures. In many cultures being sick or being healed is neither all biological nor all psychological, but a psychophysiological process (Grossinger, 1990; Kleinman, 1978). We examine this issue in later chapters. For our present purpose, research on placebos illustrates that they have a psychophysiological effect and that medicine's assumption of a mind-body split is not supportable. Indeed, the assumption of such a mind-body dualism limits medicine's ability to understand health and illness. Furthermore, mind and body exist in a social environment with which they also interact. Thus, social meanings, pressures, and relationships have at least some impact on us. The following sections sketch some of the possible pathways through which social pressures (or stressors) can become the source of psychophysical troubles.

The value of placebos is sometimes misconstrued as a simplistic mind-over-matter argument, which leads to the trap of another form of mind-body dualism: the mind ruling the body. Mind and body must be seen as interacting and not as separate elements. Diseases clearly have biological components, but they also have a psychosocial dimension. Psychosocial factors, however, do not magically transform bodies. Psychosocial pressures generally take years to exact their toll; for instance, social stress does not generate coronary heart disease or hypertension overnight. Some health problems experienced in adulthood may have begun much earlier in the person's life, even early childhood, when the organism is not yet fixed in its patterns of physical responses. Physical damages brought on by long-term stress, for example, may not be easily reversible. The fact that a health problem is affected by social factors, however, does not make it any less real.

**The Open Quality of Human Bodies: Dogs Don't Brood**

All creatures interact intimately with their environments; they have an impact on their environmental conditions and in turn are affected by them. When studying organisms and their surroundings, we have a tendency to make a sharp

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3Evidence comes from a host of disciplines with a bewildering array of names, including psychological medicine, psychosomatic medicine, psychophysiology, health psychology, sociophysiology, and psychoneuroimmunology. A central theory underlying much research in this area is that the immune system may be the connecting point between psychosocial experiences and diseases (Solomon, 1985). Such factors as social stress may have an impact on immunity, which in turn lowers a person's resistance to disease.
distinction between the environment and the creatures inhabiting it (Levens and Lewontin, 1985), but this distinction is misleading. Animals adapt to their environments, but they also transform the world they live in, often modifying it to their needs and in turn being shaped by the world they have shaped. Humans, more than other creatures, can transform their social and physical environments, but they are also more affected physically and mentally by the world they create.

Creatures are shaped not only by physical surroundings but also by their social relationships and expectations. Social relationships affect physical responses. The social position of animals, for instance, affects their behavioral responses to amphetamines. Given amphetamines, both dominant and submissive monkeys increased dominant and submissive behaviors "appropriate" to their status. When a monkey changed its social position, so did its response to the drug. Thus, under amphetamines, a monkey with increased status changed its behavior from being submissive to being more threatening and making more dominant displays (Haber and Barchas, 1984).

In a similar experiment with humans, four subjects were told they would be given a sleeping pill, but one of the four was actually given a stimulant. All four subjects became drowsy and quiet (including the one who had unknowingly been given the stimulant). This study shows the importance of social expectations, the influence of the experimenter, and the behavior of one's peers (in this case the other three subjects) for one's physical response. Psychosocial factors were thus as important as the drug's biochemical properties in influencing people's behavior (Bakal, 1979: 180). Culture and social learning affect how the individual experiences the effects of drugs (Becker, 1967). The ability of the hallucinogen LSD, for example, to produce a psychotic episode does not depend merely on the chemistry of the drug but also on the sociocultural setting in which it is experienced.

Human physical functioning is more responsive than that of other animals to its environment (Berger and Luckmann, 1967: 47–50). This is true for a number of reasons:

1. Human beings leave the womb more unfinished than other creatures and exist in an extraterrestrial social womb of dependence on others. Social learning begins before we are biologically complete (for instance, our central nervous system is not fully developed) for an extended period after birth. Because human young are more open and malleable, early social learning has a deeper impact on them both physically and mentally. Although rats are far more "closed" than humans, studies show that activity and social stimulation can modify the brain of infant (and even adult) rats (Diamond, 1988). The role of early stimulation in constructing human physiology is much greater. Indeed, there may be critical periods in which the body is particularly "open" to social-environmental influences. Experiences early in life may influence how we respond physically to stressors later in life because they "become built into our nervous, immune and endocrine systems—our selves" (Evans, Hodge, and Pless, 1994: 184). Because human interdependence is partly a result of biology, human physiological functioning is more deeply affected by social surroundings (Birke, 1986: 85).

2. Humans communicate through the use of symbols, which allows them—unlike other creatures—to reflect on themselves and their bodies, and to attach meanings to events (Berger and Luckmann, 1967). Symbols allow humans to remember experiences in a way that other creatures cannot. Humans reflect on their past and anticipate their future, but dogs cannot brood about old grudges. This is not to say dogs do not remember past pain or wait in anticipation, but relative to humans, they tend to be more grounded in the here and now. Such a capacity to reflect on the meaning of events may generate a chronic, low level of stress because our brooding can contribute to a constant degree of psychophysiological arousal. The capacity to symbolize widens the range of events to which humans respond as psychologically and physically stressful. A human can respond to the fear of being humiliated in the same way that an animal responds to physical threat. Unlike animals, however, humans do not generally respond to threats motorially (that is, by running or fighting) but by mulling them over in their minds. This response has an impact on our health, because the wider range of anxiety and guilt about our past, present, and future that may result can affect us physically.

3. Research shows ways in which seemingly involuntary physical processes, such as blood pressure, digestion, and the functioning of the immune system, can be changed in "lower" animals by conditioning (namely, reward and punishment) and in humans by learning (such as learning through biofeedback). People are capable of a great deal of voluntary self-regulation and, as yogic practitioners demonstrate, can initiate the regulation of even "involuntary" aspects of physical functioning (Pelletier, 1992). Whereas one can condition an animal to lower its blood pressure, humans can place themselves into states of mind that will alter their blood pressure. This means the regulation of blood pressure and other supposedly involuntary physical functions are not closed systems that simply operate automatically, but rather they are responsive to the psychosocial environments of which the person is a part. Human sexual responses are modulated by "higher" cognitive functions. Fantasies may amplify or diminish excitement (Cohen and Taylor, 1976). All organisms are capable of self-organizing their physical functioning; in humans this capacity seems greater. This capacity may be affected by moods, emotions, and feelings about ourselves that are in turn connected to our social existence (Buylendijk, 1974).

In sum, one might loosely characterize human physiology, relative to that of other creatures, as more responsive to its environment and more capable of self-regulation. Humans have more open and more controllable bodies; hence, we are more "makeable." Our bodies have greater access to the outer physical and social world because humans are free from fixed instinctual patterns and have greater capacity for self-regulation. One human aspect of our bodily nature is this particular openness to the world. "Our body in its relative independence has an opening to a formed outer world" (Buylendijk, 1974: 19).

Through these mind-body thoroughfares, our movements are shaped by the physical constraints of our world, and our internal environment fluctuates to some extent with our experiences in the social and physical world. The way in which
conversation can raise blood pressure serves as an example. Our way of life in a society and how we experience this way of life are linked to the functioning of our bodies through muscular, neurohormonal, cardiovascular, respiratory, and other systems. Due to our developed self-consciousness and capacity to reflect, the self can dampen or incite the physical systems and in turn be affected by them.

The ability to communicate symbolically (which is intrinsically tied with this open quality) makes us susceptible to a wider range of stressors than other forms of life experience. Humans respond physically to both physical and socially symbolic threats. Most psychosomatic illnesses are therefore peculiarly human. Humans also possess a greater ability to modify stressors' impact by the way we interpret them.

Body and society can intersect in many ways. We have reviewed some obvious connections, such as the impact of cultural and social factors on our diet and hence on our physical condition. Other interrelationships between body and society are more subtle, such as ways our biochemistry may be influenced by the temporal rhythms of social environments or relationships. Some body-society influences involve surface modifications of our muscular-skeletal structure, including our posture, movements, and the shape of our bodies. Others may penetrate our body by changing blood pressure or the responsiveness of our nervous system. Although showing relative internal stability, our bodily systems are "never completely withdrawn from a relationship to a way of existence" that is constantly changing and affecting these bodily systems (Buytendijk, 1974: 29).

Respiratory functioning, which is both voluntary and involuntary, exemplifies such body-society connections. We breathe automatically, yet can hold our breath. How we breathe may be affected by our mood. Anxious people breathe more shallowly. Anxiety in turn may be produced by social settings. What we have here is a kind of society-mind-body bridge (Lupton, 1994). Similarly, blood pressure, blood sugar, and immunity are affected by patterns of neuroendocrinological arousal (Gruchow, 1979), which are themselves linked to the way we live and respond to our life experiences. The early empirical and theoretical foundations for such linkages can be found in the pioneering works of W. B. Cannon (1929) and his student who became the father of contemporary stress research, Hans Selye (1956).

The Neurohormonal Connection: Stressor and Stress Response

The body’s response to stressors appears to involve the immune, hormonal, and nervous systems. Previously considered self-contained, these systems are now increasingly seen as interconnected (Evans, Hodge, and Pless, 1994).

A stressor, or a stress situation (Suter, 1986), refers to stimuli, or environmental conditions or events, that elicit stress. We include here those stimuli that come from our minds, such as recalling a frightening event. The threat of a dog’s bite is a stressor, and our body’s response to that stressor is called the stress response or fight-or-flight response. The stress response is the body’s way of getting ready to deal with the stressor by mobilizing itself to either fight or to flee. This "fight-or-flight reflex," as Cannon (1929) called it, involves neurohormonal changes in the body (Suter, 1986: 73), which elicit a particular pattern of arousal or excitation in the nervous system and the release of certain hormones. One function of these hormones is to "stimulate and coordinate distant organs" (Selye, 1975: 148).

Hormones are released by the endocrine glands directly into the body, and they stimulate or depress various physical functions. These hormones act as the body’s chemical messengers, telling it to step up or to slow down its activities. Adrenaline (also known as epinephrine) and noradrenaline (norepinephrine) are examples of a class of stress hormones known as catecholamines. The stress response involves changes in the central nervous system (CNS; the brain and nerves in the spinal cord) and the release of some of these hormonal substances.

Other examples of stress hormones are the corticosteroids. Research since Selye, however, has suggested that many other hormonal substances, including peptide hormones (for example, endorphins) play a role in the stress response. Thus, to speak of specific stress hormones may be misleading (Pelletier and Herzog, 1988; Weiner, 1992). We could think of hormones as "information substances" (Fill, 1989). One function of hormones is to stimulate and coordinate distant organs (Selye, 1975). Another may be to provide communication links between different physiological systems. Thus, peptide hormones, for example, influence communication between the brain and immune system (Pelletier and Herzog, 1988). Both the organism and its relationship with its environment can be conceptualized in informational terms, with neuroendocrinological functions acting as information networks within the organism (Weiner, 1992).

The fight-or-flight response, according to Selye, is a general physiological response that involves a number of systems throughout the body and can be evoked by any number of nonspecific stimuli (stressors) in the environment. Selye noted that his medical training encouraged a blind spot for the idea of nonspecific factors. In the course of his medical education, specific diseases and their causes "assumed an ever increasing importance and pushed the syndrome of just being sick, the question 'what is disease in general?' out of my consciousness into that hazy category of the purely abstract arguments that are not worth bothering about" (Selye, 1956: 17). In contrast to Selye, other researchers (Weiner, 1992) argue that stressors evoke physiological responses specifically attuned to those specific stressors. Furthermore, prior rhythms of the organism, genetic predispositions, social contexts, and other factors influence physiological responses to stressors. We examine some sources of variability in physiological responses to stressors later in this chapter.

The stress response, in the form of neurohormonal activity, creates a number of nonspecific changes in the body\(^4\) that adapt the organism for fight or

\(^4\)The stress response can never be measured directly. In a sense, a stress researcher is like an investigator who tries to deduce what is happening inside a factory on the basis of noises he or she hears while standing on the outside (Suter, 1986). Some measures of stress include the calculation of the amount of electrical activity in the nervous system and the biochemical analysis of blood and urine, but all of these methods have problems. For instance, although the quantity of catecholamines in a person's urine reflects different levels of stress, it may also be a function of that person's unique way of metabolizing (processing) such substances because some people will excrete such hormones more rapidly than others.
flight (Sapolsky, 1990):

1. Blood pressure is increased. Blood flows to the muscles and heart, and much is diverted from the peripheral (outer) parts of the body; this is why cold feet and hands are often a symptom of stress. Blood is also diverted away from functions, like digestion, not needed for fleeing or fighting.
2. Sugars and fats (including cholesterol) are released to give the body energy.
3. Immunity is temporarily depressed to allow the body to tolerate possible invasions, such as wounds.

These changes suggest how prolonged, uninterrupted stress might create physical problems. For example, does the continued release of fats and sugars into the blood help explain the connection between stress and coronary heart disease? Can prolonged stress affect the mechanisms that regulate blood pressure? These are some of the issues investigated by stress research.

Weiner (1992) suggests that research should focus on disturbances—what he calls “perturbations” of neuroendocrinological rhythms and ways in which stressful experiences relate to those disturbances. He advocates looking at both organic (disease) and functional (ill health) problems from this holistic model. Some researchers believe that stress-induced neuroendocrinological changes generally only contribute to causing disease (as a cofactor along with others, such as prior structural damage and genetic factors). Furthermore, they argue that stress-induced changes contribute more to ill health than to the onset of disease. Disease (such as coronary heart disease) has a relatively clear biological basis. Bodies also manifest ill health in a wide range of symptoms such as sleeplessness, fatigue, hyperventilation, chronic pain, and so on. These symptoms, on the other hand, do not have a clear-cut organic basis (Weiner, 1992). Even though such forms of distress are common medical complaints, medicine has neglected them because they lack clear organic sources. Given the tendency for medicine to see mind and body as separate, often doctors do not take such problems seriously.

The events in modern life that elicit the stress response in humans are not usually physical but more typically social and symbolic in nature (for example, the threat of being humiliated). Furthermore, modern conditions do not always make the adaptive response of fleeing or fighting a practical one. We may be provoked by a boss to fight or run, but we have learned that neither response would be appropriate. Thus, the body may be continuously geared up for action but not allowed by the rules of civilized behavior to act.

Any demanding situation, such as climbing a dangerous trail for enjoyment or mining coal in a dangerous mine shaft for a living, can be stressful. Not all stressors are negative, however; some can energize and challenge. Stress itself is not inherently unhealthy. It is a part of life, and a totally stressless environment would be both impossible and boring.

Negative and positive stressors are not necessarily equal in their impact on us. Are there qualitative differences in how people respond to negative or positive stressors? Research (Dohrenwend and Pearlin, 1982) suggests that it is not just change or environmental demands that are stressful. The uncontrollability of the stressor event seems to increase its destructive consequences for the body. Stressors are likely to have a negative effect when the individual feels helpless in the face of them.

The Relationship Between Physical and Sociopsychological Stressors

Just as physical factors affecting health (such as diet) cannot be separated from sociocultural ones (such as eating patterns), so too sociopsychological stressors may be difficult to separate from physical stressors. A physical stressor may have an impact on psychological states like mood (Bullinger, 1990). For example, noise levels may not only have physical consequences, such as damage to hearing, but may also influence mood and act as a psychological stressor. Furthermore, evidence indicates that physical and sociopsychological stressors interact with each other. By lowering immunity, stress can aggravate an individual’s vulnerability to infectious microorganisms. Being physically rundown may also make it harder to cope with social stresses. Often different kinds of stressors interact with each other and may in fact increase one another’s impact on the body. Such a mutually enhancing interaction is called a synergistic relationship. Each factor may “feed” into the other, amplifying effects that either one alone might have had.

The relationship between diet and stress exemplifies synergism. In our fragmented ways of looking at health and illness, we often focus on one factor (such as diet) as the determinant of health. Some think that eating properly will save them from heart disease and other woes, yet diet cannot be considered in isolation from other factors. A high cholesterol diet combined with high levels of social stress can increase the likelihood of atherosclerosis (hardening of the arteries), over and above the effect of diet by itself (Eyer, 1984; Kaplan et al., 1983). Smoking and stress combined may interact synergistically to raise blood pressure and heart rate (Karasek and Theorell, 1990; Ratliff-Crain and Baum, 1990).

Not only physical stressors (for example, workplace ergonomic conditions) but also mental ones can influence levels of muscular tension leading to musculoskeletal disorders (Lundberg et al., 1994). Mental stress can produce muscular tension in the absence of a physical workload; it can be aggravated by the fact that muscles are being “readied for use” but not being used. Mental and physical stressors can get together synergistically to increase muscular tension. For example, the combination of the inability to relax at home because of a “second shift” of household labor and physical work conditions (at a computer terminal, for instance) may lead to the high incidence of neck and shoulder problems among women (Lundberg et al., 1994).

A QUESTION OF SUSCEPTIBILITY

Why do two people react very differently to the same stressors? Some of us face stress with confidence; others with fear, despair, and a sense of hopelessness. Some people seem to weather life’s crises without much damage; others break easily. Clearly, it is not only the stressor itself that determines the reaction, but also how
the individual experiences and deals with the stressor. Furthermore, research suggests that even physiological reactions to stress vary from person to person. Some people’s bodies react very strongly to a stressor; others’ less so. What factors account for such variations in individual susceptibility?

Although there are important individual variations in reactions to stress, we should avoid individualistic interpretations that ignore the social circumstances contributing to these variations. Such approaches tend to blame the victim of stress rather than to examine the social situations that might account for variations in individual susceptibility. Three interrelated kinds of individual variations in stressor reaction exemplify this problem; the mere presence of a stressor does not account for a person’s physical reaction to it. First, there are differences in the way people’s bodies respond to stressors (physiological reactivity). Second, there are variations in how people perceive stressors and assess what is happening to them (cognitive-emotional appraisal). Third, there are differences in the way people manage stressors (coping).

**Physiological Reactivity**

Although the basic pattern of the stress response remains essentially the same from person to person, researchers have found recurring individual patterns in the way people’s bodies respond to stress. Some individualized physical responses are more fixed or rigid than others. Two people faced with the same stressor will show differences in the level to which their blood pressure rises. The pressure of persons who have hypertension tends to fluctuate more dramatically than that of those whose blood pressure at rest is “normal” (Buitendijk, 1974; Suter, 1986).

Individuals also differ in their patterns of neurological excitation. In some people the ergotropic response, in which sympathetic arousal is high, is more easily elicited. Other people respond more quickly with a tropotrophic response, in which parasympathetic excitation predominates (Suter, 1986). Individuals may also differ in how readily their bodies shift between these two responses, physically changing from being in a state of fight or flight to being in a state of relaxation (Gellhorn, 1969).

Individuals have varying hormonal reactions (Bieliauskas, 1982: 5). In some laboratory studies, men produced more epinephrine in response to stressors than women did. A study of women in nontraditional “male” occupational roles, however, showed that women meet demands with almost no sharp increase in epinephrine like the men’s (Frankenhaeuser, 1991). It is nonetheless possible that this difference has genetic and natural bases. Perhaps men overreact to stress, thus producing an inefficient excess of stress hormones (Frankenhaeuser, 1991; Overfield, 1985; Polefrone and Manuck, 1987). Some physiological variations may reflect differences in biological makeup. Perhaps men and women do differ biologically to some extent in hormonal reactions. Perhaps some individuals are genetically predisposed to hypertension or coronary heart disease. Such issues are by no means resolved, and the research results are mixed.

Variations in physiological reactivity, such as differences in catecholamine reactivity, may also be the result of social factors, at least to some extent. Men and women are socialized to deal with stress in different ways. It may well be that these learned patterns also affect their way of responding physically (Birke, 1986). The fight-or-flight response tends to elevate blood pressure. A long-term exposure to stressors and a learned typical way of responding to them might eventually lead to a regular pattern of reacting physically, as some animal studies suggest (McCarty et al., 1988). One study suggests that chronic occupational stress in blue-collar workers may, over an extended period, modify the way the heart and blood pressure respond to stressors (Siegrist and Klein, 1990).

Moss (1973) has argued that given a certain cognitive-emotional orientation to stressors, over time the nervous system might become “tuned” into a particular pattern of arousal. Thus, the sympathetic nervous system’s reaction to situations might become amplified and fixed in that amplified pattern. This idea of “tuning” raises interesting possibilities. Our bodies are “open” to our environments to greater or lesser degrees at different phases of our lives. Exposure to an extremely stressful situation (for example, child abuse) at one point in one’s biography may alter one’s pattern of responding physiologically to a stressor at later times in one’s life. Some research suggests that physically and sexually abusive childhood experiences can disrupt cardiovascular and neurohormonal activity in adulthood (Taylor et al., 1999; Heim et al., 2000) and even brain development (Ito et al., 1998; Mustard, 2000).

Primate studies show that early social experiences may have impact on not only subsequent behavior, but also physiological reactivity throughout life (Suomi, 2000). Emotional and social insecurities in early childhood may, for instance, lead to high basal levels of stress hormones, like cortisol. In this way, insecurities and intensely stressful experiences may cast a long shadow over health in later life (Wilkinson, 1996: 494). Individual physiological patterns in responding to stress might be partly the result of learning and other social experiences (Suter, 1986: 84). The distinction between physiological factors and social factors in health is thus not always clear cut.

**Cognitive-Emotional Appraisal**

Cognitive-emotional appraisal is the physiological impact of a person’s interpretation and emotional reaction to a stressful event. In one study of this phenomenon, Lazarus (1966) and his associates showed male students different versions of a film that depicted ritual operations on the genitals: circumcision (cutting around the penis to remove the foreskin) and subincision (cutting the penis lengthwise). One version of the film had no sound and showed only the operations. Another version had a soundtrack that emphasized the harmlessness of the procedures and the fact that the participants in the rites saw them as an honor. A third version contained the narration of an anthropologist who, in an intellectual tone, constantly commented on events as the interesting and “exotic” customs of other societies.
The researchers measured the level of physiological stress response of each member of the audiences. Those exposed to the second or the third version of this film showed lower physiological levels of stress. Lazarus concluded that one’s physical reaction to a stressor is affected by how one interprets it. In this case, the soundtracks helped the audiences interpret the stressor as less threatening. Although watching a stressful event on a film is not the same as seeing it in person or having it done to oneself, such experiments illustrate that our interpretations of events have a significant effect on how we react to them.

Several theories emphasize the importance of an individual’s cognitive-emotional appraisal of situations in linking stress to illness. Antonovsky (1987: 13) proposes that people with a high “sense of coherence” are healthier:

[They have] a global orientation that expresses the extent to which one has a pervasive, enduring though dynamic feeling that (1) the stimuli deriving from one’s internal and external environments in the course of living are structured, predictable and explicable; (2) the resources are available to one to meet the demands posed by these stimuli; and (3) these demands are challenges worthy of investment and employment.

Antonovsky (1990) conceptualizes this sense of coherence as “dispositional orientation” (rather than personal “trait”) toward experiencing stressors as comprehensible, manageable, and meaningful.

Cultural factors and an individual’s position in a social structure can affect this sense of coherence. Antonovsky does not, however, thoroughly examine the ways environments disempower people, nor does he systematically consider how conditions that attack a person’s sense of coherence are built into the social organization of institutions such as the workplace and the family. He also does not explore in sufficient depth the impact of social and economic systems such as capitalism on individuals’ sense of coherence.

These theories emphasize the importance to health of feeling a sense of empowerment or control. What they clearly do not distinguish is how a person feels or perceives the world, as opposed to conditions that lead a person to emotionally and mentally appraise the world a certain way. The emphasis on cognitive appraisal in the stress literature often implies that how one perceives an event is the result of a psychological attribute or quality inherent in the person, independent of the event itself (Evans, Hodge, and Pless, 1994). This approach treats how we perceive things as almost unrelated to what we are perceiving. Such a focus may downplay common, objective environmental stressors such as poverty (Moos and Swindle, 1990). Furthermore, people may react physiologically to a stressor but not be consciously aware of it (Krohne, 1990).

Although individuals do vary in the way they appraise stressors at any given time, these differences are often the result of former social experiences with past stressors. Feeling helpless may come from some set of previous objective experiences. If, for instance, people were once overwhelmed and made to feel powerless by social class, economic, or familial events, later in life they may find it harder to believe that a stressor now confronting them is a manageable one (even if it is!) (Evans, Hodge, and Pless, 1994).

Seligman (1992) observed that animals placed in laboratory conditions of helplessness for a long enough period were unable to cope with subsequent stress or possible activity. He has linked such “learned helplessness” to depression, poor health, and a generally heightened susceptibility to stressors. Female monkeys in subordinate statuses are at greater risk for depression (Shively, 2000; Shively et al., 1999). Being a lower-status monkey means less control, being more isolated and a more likely target of oppression.

The experience of powerlessness in everyday situations at work or home may produce a similar learned helplessness in humans (Lennerlöf, 1988). Other authors have introduced similar concepts, for example, the “giving-up complex” (Schmale, 1972) and the “paralysis of will” (Bakal, 1979). Likewise, the notion of “surplus powerlessness” (Lerner, 1992) suggests that if individuals were once made to feel powerless, the expectation that they will again be powerless builds up and keeps them from acting when confronted with stressors (even when they are able). People’s present reactions to stressors are thus linked to their past experiences with empowering or disempowering situations. A lifetime of social exploitation or domination will certainly have an impact on whether a person feels empowered.

Cop ing

Cop ing refers to all of the ways of managing the tension a stressor produces (Mechanic, 1978: 51). As Syme and Berkman (1976: 6) observed:

Generalized susceptibility to disease may be influenced not only by the impact of various forms of life change and life stress, but also by differences in the way people cope with such stress. Coping, in this sense, refers not to specific types of psychological responses but to the more generalized ways in which people deal with problems in their everyday life. It is evident that such coping styles are likely to be products of environmental situations and not independent of such factors.

One’s cognitive-emotional appraisal of a situation is in itself a way of coping or managing stress. Some people overreact emotionally; seeing the glass as half
empty, they give up. Others see a glass that is half full and keep striving. Coping is not merely a matter of attitude, perception, or emotional response, however; it also involves action—that is, doing something about the stressor.

The focus of much stress literature on individual coping leads to two blind spots. First, these studies fail to consider how power affects people’s ability to do something about stress. How does social class, ethnicity, gender, or work situation influence resources for effective coping? Second, much research tends to separate coping and stressor, thereby missing the fact that the conditions creating stress often also limit both the possibility of and options for coping. One’s social position (such as one’s status as a woman) often limits options for coping. In some areas of life, such as in friendships, certain personal styles of coping strategies are possible, but in much of everyday life people’s options for managing stress are very limited. The world of work, for example, allows most people only limited coping strategies (Pearlin and Schooker, 1978). Coping ability tends to be viewed as primarily an individual phenomenon. This misconception comes from separating individuals from the social and cultural contexts in which they cope (Peterson, 1994; Valach, 1995).

The early literature on stress gives the impression that stress is a problem primarily for high-powered, white-collar workers. Yet research indicates that although these groups do face a great deal of stress, they also have access to resources that allow them to cope with it more effectively than those who lack resources. Even among animals the “top dog” generally has more resources to handle stressors than the “bottom dog.” One study of baboons found that, in response to stress, high-ranking males showed faster increases in cortisol, a stress hormone, than subordinate baboons; however, their basal level (that is, the ordinary amount when not exposed to stress) of the hormone was lower than that of the subordinates. Furthermore, when the stressful event ended, the amounts of cortisol in high-ranking baboons returned more rapidly to the basal levels than did those of their subordinates. The more effective coping of these “top bananas” was attributed to such advantages as better choice of food, mates, and living conditions (Sapolsky, 1982, 1989, 1990; Wilkinson, 1996). Another researcher found that rats that can control the source of stress or predict when stress will occur also cope more effectively and show fewer pathological effects of stress than do rats that cannot control or predict stressors (Pelletier and Herzog, 1988: 32). The blood pressure and cardiovascular reactivity of rats in response to stressors have been shown to be linked to their position in the social hierarchy (Bohus et al., 1991). Lower-status female monkeys had higher levels of coronary artery blockage than higher-status ones (Shively, 2000; Shively and Clarkson, 1999).

A wide range of physiological patterns is associated with subordinate rank in animals; these patterns vary as the social status of the animal changes. They are thus a function of the animal’s social status (Weiner, 1992: 176). Although animal studies cannot be used uncritically to generalize about human situations and behavior, executives and other “top bananas,” whose job conditions allow for control and provide resources for coping (such as more control over the use of one’s time), can probably cope with stress more effectively than those who do not experience such advantages.

One might argue that nonexecutive stress is a more serious health hazard than executive stress. A study of 5,100 Swedish and American men found the highest risk of coronary heart disease among workers with both heavy job demands and a “low ability to influence how their tasks are done” (Karasek and Theorell, 1990; Peterson, 1994). Thus, one’s social position (such as on the job) may influence both the amount of stress one faces and the resources one has for coping. The most stressful occupations are those that combine high levels of stress with little control over those stressful conditions. Being a telephone operator or a waitress may therefore be more stressful than being a bank officer, sales manager, or physician. For example, a National Institute of Occupational Safety and Health study found that clerical women who had low control over their work with VDTs (video display terminals) showed higher levels of job stress than the highly pressured air traffic controllers, who also work with such terminals (Howard, 1985: 73). Similarly, a survey of U.S. Post Office mail handlers found them to be largely in the “high strain” job category—high job demands and low decision latitude (Cahill and Landsbergs, 1996). Thus, the social circumstances in which people find themselves influence not only the demands to which they are exposed but also their ability to handle those demands.

Corporate health programs have proliferated in the United States. Sponsored mainly by larger corporations, they emphasize exercise, meditation, diet control, and smoking cessation (Conrad, 1988; Pelletier, 1985). Although programs for blue-collar and lower-echelon white-collar workers exist, many are directed toward executives, who present potentially more expensive health-related losses for the corporation. These programs seem to have developed in an economic environment of escalating medical costs to corporations and governments (Alexander, 1988). However, there is no definitive evidence yet that, in the long run, they do prevent illness (Conrad, 1988). Indeed, they may be attempts to impose new forms of social control on the workers through a new corporate health ethic, by shaping values and attitudes of workers toward their lifestyles and also toward work. Such an ethic stresses the individual worker’s fitness, strength, diet, and health habits while avoiding scrutiny of social contexts that affect health (Conrad and Walsh, 1992).

Although their overt function is to use prevention to reduce health care costs and loss of workdays, corporate health programs may also direct attention away from political and environmental issues in the workplace. They do not generally encourage workers to examine critically the social conditions under which they work, such as work pace, vacations, breaks, or participation in decisions affecting their work. The implicit message to employees is that their health (and the costs they incur by being sick) are their individual responsibility (Glassner, 1989). Such programs may even be used to justify cutting back on medical benefits. The corporate image also benefits by such programs, and other parts of the business sector profit by selling the equipment and services for these programs (Alexander, 1988).
Stress and Power

Young (1980: 133) observes that both scientific and lay discussions of stress tend to “subvert sociological reasoning” by removing people from their social contexts and from class and group conflicts. They tend to emphasize subjective factors and the way individuals perceive events, or in other words, psychological as opposed to sociological factors. The way people see things gets confused with the way things are (Young, 1980: 145). Instead of beginning analyses of stress and health by looking at coping responses, cognitive-emotional appraisal, or individual forms of coping, why not begin by examining social conditions of inequality or structural arrangements, such as those that force a person to work under pressure or do not allow time to relax?

The incidence of diabetes among Mexican American migrant farm workers illustrates the relationship among psychosocial stress, limited options for managing stress, and social inequality. Much research on diabetes has focused on genetic factors, together with nutrition, obesity, and health behavior. Although these variables are important influences, exclusive emphasis on them obscures the role of such factors as social inequality. Diabetes is more common among low-status and low-income people. The exact role that psychosocial stress plays in the disease is not clear; however, some evidence suggests stress may influence its onset and course (Jacobson and Leibovich, 1984; Scheder, 1988).

Stress can also affect health behavior, such as excessive eating and drinking. The neuroendocrinological arousal generated by high levels of chronic stress may also affect blood sugar metabolism (Jacobson and Leibovich, 1984). One study found that rates of adult-onset diabetes (Type II diabetes mellitus) were much higher among those who had spent a long time as migrant farm workers and had frequent experiences of stressful life events. Obesity did not distinguish those who got diabetes from those who did not. Rather, the high levels of stress experienced by these migrant workers as a result of their low social position, disrupted social networks, social marginality (that is, being outsiders in American culture), discrimination, heavy workloads, job insecurity, poverty, and feelings of hopelessness and helplessness contributed to catecholamine-produced impairments in glucose levels (Scheder, 1988).

Folk diseases such as “nerves” (nervioso or nervoso) also reflect the links among stress, power, and sickness. “Nerves” are a form of ill health characterized by physical symptoms that appear to have no clear organic source, such as fatigue, trembling, headaches, fainting, and feeling of imbalance. “Nerves” are physical responses to situations of extreme powerlessness that characterize the lives of many poor people, especially women. That similar illness is widely experienced cross-culturally suggests the importance of issues of power, personal sense of control, and psychosocial stress for people’s health and well-being (Duffie, 1996; Low, 1994; Schepf-Hughes, 1992).

The social organization of time provides an excellent example of the complex interrelationship of physical, sociopsychological, and political (that is, relationships of power) sources of stress and illness. Our social material environments (such as the design of our work spaces and the pace of work demanded of us) are important influences on our bodies. Our everyday lives take place in social contexts in which time is organized in specified ways. These contexts constrain or empower us and can have an impact on our health.

Sickening Schedules

Control over time—our own or other people’s—is a form of power. Powerful persons have the ability to regulate other people’s time and labor. The ability to manage our own schedules is limited by our position in society. Wealthy persons have more resources for managing the stress of demanding schedules. A teacher can keep a student waiting, but students should not be late for their appointments with a teacher because a teacher’s time is assumed to be more valuable. Time is socially organized, and the ability to schedule time and to manage it is socially distributed. Those with more power have more control over time (see Bellaby, 1999).

From the moment we enter the world as babies, we are subject to a social calendar that is not of our own making, and we are taught to respect the constraints of time. The fragmentation and structuring of time and space in adult terms begins early. In some societies, however, adults and children do not experience such sharp time distinctions between work and play (Cherfas and Lewin, 1980).

In our society, the emphasis is on productivity. The social organization of our economic life is the basis of much of our social scheduling of time. This organization demands intense productivity. How members of a society collectively use time and the different degrees of control over their own or other people’s time are central sociopsychological factors in health. They determine the frequency and intensity of stressors as well as the effectiveness of means of dealing with those stressors. For example, work time can be stressful for many people; factors such as social or occupational status influence how well they can cope with work time.

Time and Work

In general, employment is a power relationship. The employer, using rewards and sanctions and controlling workers’ time, pursues the goal of maximizing the labor productivity of employees. Employees, by contrast, have an interest in conserving their energies and ability to function and in controlling their own time, as much as possible. These divergent interests mean that workplaces are often the sites of struggles over temporal control (Bellaby, 1999: 114).

In the first half of the twentieth century, employers extended their intense control over workers’ time. The rhythms of the machine increasingly paced workers...
themselves. With the emergence of the assembly line, new systematic and rationalized forms of control (subsequently called "Fordism"—named for Henry Ford) predominated in the workplace, encompassing not only manufacturing but also office work. For instance, standards for workers were increasingly set by time-and-motion studies.

The work of Frederick Taylor epitomizes the attempt to impose rationalized scientific controls over time and motion. In *The Principles of Scientific Management* (1911/1947), Taylor argued for a sharp division between those who plan work and those who do it. The planning was to be carried out exclusively by managers trained in scientific management. Jobs were to be divided and subdivided into the smallest, easiest-to-learn unit of activity. Time-and-motion studies would determine the most efficient way to move and the optimum unit of time each subdivided task should take. These studies would then set standards for precisely how and how fast all the workers would move. Taylor argued that such a system of management should take precedence over the idiosyncratic rhythms and needs of individual workers (Karasek and Theorell, 1990). Although his system is no longer widely applied in most workplaces, the attitudes and assumptions of Taylorism still prevail among many managers.

Work in industrial manufacturing in particular was highly regulated by machines and specific, limiting instructions. Tasks were broken down into short, simple, repetitious units of activity (Braverman, 1974). The result of this form of control, used in the pursuit of productivity, was to place workers increasingly into environments that moved too fast, were deadeningly boring, and controlled the motions of the body in an unnatural and uncomfortable way.

The pace and motion of factory work has been extended to white-collar office work. The movements of some keyboard operators and other office machine operators have taken on "automaton-like characteristics" (Stellman, 1977: 55). Computer technologies opened up new work possibilities, but have also led to more highly repetitious, boring, machine-paced work in the office. Computer technology provides for increased control over individual workers. A terminal on a supervisor’s desk can monitor the number of strokes made by each individual keyboard operator (National Safe Workplace Institute, 1990).

Bell Telephone computers print 15-minute summaries of how many operators were on duty, how many calls each operator handled, the average speed of an operator’s answer, and how long they spent talking to each customer (Howard, 1985: 63). Citicorp Bank uses a computer information system that provides management with data about workplaces hundreds of miles away. Each clerk’s printout shows the amount of time spent processing records, talking on the phone, and the like. The records are then evaluated according to standards set by Citicorp’s time-and-motion specialist (Howard, 1985: 30–31). A National Association of Working Women’s survey found that 35 percent of its members, in jobs as diverse as bank teller, data entry clerk, secretary, and truck driver, were monitored by computer (Howard, 1985: 62). Even middle-level managers and executives are subject to closely monitored time controls; some must submit accounts of work done every half hour (Garson, 1988). Thus, in bureaucratically controlled workplaces (including office and professional work) one trend, exacerbated by computerization, is toward greater standardization of work and control over time (Burris, 1993; Garson, 1988).

**Load Balance** Some environments demand too much, too fast; others demand some degree of involvement but make too few demands and are boring. The different rhythms of working (and of living in general) may be conceived of in terms of load balance: Do they demand too much or too little? How much of a load is imposed on a person? Load imbalance may involve overload or underload (or both) as temporal rhythms. A chronic load imbalance may adversely affect one’s health. Although our examples of time rhythms are drawn from the workplace, the problem of load balancing may apply equally to the lives of the unemployed, the elderly, and persons with disabilities (Frankenhaeuser, 1981).

Underload and overload are products of the degree of control one has over the rhythm of one’s work. Temporal demands are not as stressful when self-generated. However, they are stressful when they are imposed and combined with little control over how one’s work is done (Karasek and Theorell, 1990). Such jobs are likely to be held by low-status workers. Overload may involve piecework, such as being paid by the number of letters typed each hour. Overload usually results from a work environment that moves too fast for comfort. Underload often involves machine-paced work, such as an assembly line. Workers’ movements are standardized but also demand their attention. Underload tends to be boring and tiring work. Clearly some boring work need not be stressful. A night watchman can read, walk, and chat; this work may thus not be as stressful as boring work that requires sustained alertness and attention, such as watching a machine.

Work often involves both underload and overload (Frankenhaeuser and Gardell, 1976). A dramatic example is the labor process at a meat packing plant:

Two lines run during the day, one on the night shift. The pace is maintained by the skinning machine operators who place the hams with skins removed on the conveyer... Workers holding razor sharp knives are forced to match the pace of machine operators. If a worker cannot keep up, the others down the line must work faster just to maintain the pace. Arguments occur among workers, accusations of going too fast or too slow. Stress on the job is high due to the surrender of control to the machine-paced line combined with the need to maintain a constantly high level of attention. A momentary loss of attention can lead to error or injury. Indeed, the sense of stress is heightened by congestion as workers are sandwiched between the moving table and large vats for waste and trim located two feet away. From management’s perspective, however, the changes are viewed positively, because workers put pressure on each other to keep up production speeds. (Novak et al., 1990: 49, 292–293)

One can imagine the multiplicity of health risks that characterize this job, such as the danger of injury from knives and sharp machines, as well as repetitive strain injury. There is also the psychosocial stress produced by the pressure of time and
the boredom coupled with the demand for constant alertness. Many jobs involve such a combination of extremes of hectic and boring work, together with strict control over time and movements that is physically and psychologically uncomfortable. Postal and delivery service workers, particularly those like mail handlers whose work is machine-paced, are under considerable stress aggravated by recent industry moves to increase productivity often at the expense of safety (Cahill and Landsbergis, 1996; Drew, 1995). The “tyranny of the schedule” is a risk factor in occupational health (Syme, 1996: 29).

Overload and underload have been linked to increased excretions of stress hormones (Frankenhaeuser, 1981). A study of sawmill workers found that those whose jobs were characterized by a lack of control over their situation (as a consequence of overload and underload) were most likely to have increased stress hormones in their urine. These workers also reported feeling tired, tense, anxious, and ill more frequently than other workers (Frankenhaeuser and Gardell, 1976).

Low control coupled with fast pace increases cortisol and adrenaline excretions (Karasek and Theorell, 1990). Some research has linked chronic work overload among blue-collar workers to heart disease (Weiner, 1992: 88). Higher hospitalization rates for heart attacks were related in another study to hectic monotonous work, lengthy and irregular work hours, and low degree of influence over timing holidays (Haynes, 1991: 159).

Such research shows that the social organization of time can be both physically stressful (that is, contribute to bodily wear and tear) and psychologically stressful. It can contribute to ergonomic stress, affecting the body “directly” by forcing workers to a pace that puts an excessive strain on the musculoskeletal system and makes work unsafe (see Bellaby, 1999). It can also be psychologically stressful, creating unhealthy neurohumoral changes in the body.

The machine-paced nature of much work means that, in a sense, the human body must function like a machine. Because machines can tolerate what humans cannot, the gearing of the body to the rhythm and movements of a machine may have destructive physical effects. A sociologist who worked in a Hungarian tractor factory described how the time pressure of machine-paced work affected the way workers paid attention to physical signs that they are tired or uncomfortable:

The best way I can put it is like this: I cease to exist. When the huge side doors of the workshop are opened and the transporters rattle in loaded with material, I know—without having a thought as such, I simply know—that I am in a freezing draught, but I do not feel that I am cold. My back aches, there is a cramp in my fingers, the piece rate is ridiculous: I don’t feel or think any of this. (Haraszti, 1978: 112)

Time pressures can thus put one out of touch with one’s own body.

To argue that our contemporary work hours are long may seem absurd in comparison to the nineteenth-century workweek of around 70 hours (Friedmann, 1961: 105). That period, however, was not typical. Industrial capitalism was then becoming a dominant force in Western society, and productivity was being enhanced mainly by lengthening the workday. By contrast, in agricultural societies the workweek was shorter (around 30 hours a week) and more in gear with seasonal rhythms, and workers frequently labored only about 15 weeks a year (Eyer and Sterling, 1977; Johnson, 1978).

In the United States, the number of hours per year that people work has increased since the late 1960s. From 1969 to 1987, the increase for men was nearly 100 work hours per year and for women, about 300 more hours a year. Currently, approximately 25 million U.S. workers are laboring more than 49 hours a week. Most of them are white-collar workers (Fraser, 2001). In the economic boom of the late 1990s, the U.S. economy increased productivity primarily in the service sector (for example, transportation, banking, business services, and professional services—including health care), which collectively employs 77 percent of the workforce (not counting government employees and farm workers).

Government productivity figures fail to take into account the extra (unpaid) work done by many (especially salaried) white-collar workers. One economist commented: “To the extent that work time is being understate, productivity is being overstated. . . . Acceleration of productivity growth through hard work alone isn’t sustainable: people simply can’t work harder and harder indefinitely” (Roach, 2000). Salaried “managers” are not covered by the Fair Labor Standards Act (FLSA), so employers evade overtime and minimum wage laws by labeling service jobs “assistant manager.” Other employers changed professional jobs (for example, computer software development and stock broking) from salaried work to the status of “independent contractors.” This arrangement saves the employer from having to pay for the worker’s pensions, health care benefits, social security taxes, and wages for the full time the job takes. Productivity is overstated also when wage workers are not paid their full due. For instance, restaurant workers are expected to clean up after closing time—often, “off the clock.” Although the 1938 FLSA made this practice illegal, the federal agency which enforces the law has had its budget cut repeatedly in the last 20 years, so employers flaunt the law regularly with impunity (Geoghegan, 1999).

In Europe in recent decades, work hours have generally decreased, perhaps because of stronger unions than in the United States, but globalization of labor markets has created increased pressures on workers in Europe, as well as the United States, to work harder and longer. Paid vacation time required by law in Europe ranges from four to five weeks a year (Schor, 1992). The United States has no requirements for paid vacations, and the standard paid vacation (when employers offer one at all) in the United States is less than half as long as in Europe.

Shift Work Working on shifts is another kind of temporal rhythm that is utterly unknown in many societies. As capitalism became the predominant form of economic and social organization in Western society, shift work became more common. By 1980, 11 percent of full-time U.S. workers were on late shifts (U.S. Department of Labor, 1981). Roughly 20 percent of U.S. workers are on some form of shift work (Klinkenberg, 1997). In Europe the proportion of workers on shifts has increased overall since World War II, with the greatest increases among women and
nonmanual (white-collar) workers (Blyton, 1985). Shift work became more common as the investment in machinery became greater and as it became profitable to sustain production around the clock. Some shift work is needed for technical reasons, such as a specific manufacturing process that cannot be interrupted. Certain service jobs (like those in hospitals) also require round-the-clock coverage. Most shift work, however, is instituted because it increases profits by maximizing the use of the equipment and space in which capital has been invested.

There are many different systems for arranging shifts. The most common is to have an early morning, late afternoon, and night shift (for example, 5 a.m. to 1 p.m., 1 p.m. to 9 p.m., and 9 p.m. to 5 a.m.). The number of days worked on the same shift is called the rotation period. The most common rotation period is one week (Baker, 1981: 109).

Shift work often goes against the rhythms governing many bodily functions. Heart rate, body temperature, the production of various hormones, and metabolic rates all vary with the time of day, and seem to follow a 25-hour cycle called a circadian rhythm (Åkerstedt, 1990). One researcher suggests that shift work often violates workers' physiological rhythms by not giving them enough time to adjust from one cycle to another (Levi, 1981, 1978). One study exposed 100 volunteers to rotation periods that shifted between three days and three nights of continuous work. It was found that the circadian rhythms, geared to being awake during the day, persisted. The author concluded that although the endocrine system will eventually adapt to the shift, long rotation periods are necessary to adapt (Levi, 1978). However, most shift arrangements do not allow for this.7 Studies show higher rates of sleep and digestive disorders among shift workers (Åkerstedt, 1990). Although some argue that shift work has not demonstrated long-term serious effects on health (Poole et al., 1992), one study found a connection between cardiovascular disease and the amount of shift work done. Higher levels of serum cholesterol also were found among shift workers (Knutsson et al., 1986).

The time of the day a person must work affects sensory-motor performance (for example, quickness of reflexes). It also has an impact on the metabolism (the body processing) of various chemicals and toxins to which individuals are exposed in the course of their work. How quickly the body absorbs a medication depends on what time of day it is taken. Similarly, how chemicals and other physical stressors affect the body may depend on the time of day of exposure, an issue that has not received much attention in research on time, work, and health (Baker, 1981: 117). Social factors often interact with psychophysical stressors in complex ways.

Shift work, like overtime, may be formally voluntary in the terms of a union contract, but often financial pressures or fear of denying a superior's request may make what is formally voluntary in practice almost compulsory (Pfeffer, 1979: 87–88). Working overtime or on different shifts, furthermore, has social consequences for workers and their families. Shift work often intrudes into the worker's personal life, affecting leisure and social networks such as family and friendships. These changes in turn influence eating habits and sleep patterns, and may produce such adverse health consequences as digestive disorders (Klinkenborg, 1997). For these reasons, some countries, such as Sweden and Belgium, have laws that strongly limit the prevalence of shift work.

Some experiments allowing employees to have some control over their own time, by choosing to work longer days and shorter weeks or other alternatives to nine-to-five daytime hours, have been tried in the United States and Europe. In West Germany and Switzerland about 40 to 45 percent of the work force is on flextime; it is mainly a white-collar prerogative, but more blue-collar workers are on flextime in those countries than in the United States. About 8 percent of the U.S. work force has flextime, and those workers are concentrated in the service sector and among nonmanual workers in large-scale business enterprises (Blyton, 1985). Unfortunately, flextime experiments are often limited by overriding fears of declining productivity and managerial control. Unlike flextime, U.S. industrial use of "compressed" work weeks (more hours per day over fewer days per week) and mandatory overtime to achieve "just-in-time" production, is often not a matter of choice for employees. A 1996 survey found that 34 percent of large companies used compressed work weeks for some of their employees (Kilborn, 1996). Although this compression may be preferable for some workers, for others it is highly stressful.

**Work Time, "Free" Time**

The increasing use of cell phones, pagers, and computer technologies makes it possible for work time to seep into "free" time. Such "job spill" (Fraser, 2001), when work tasks invade free time, is a new and growing source of work stress. White-collar and professional workers are increasingly pressured to check and respond to voice and e-mail messages during their free moments (such as while commuting) and even on vacation.

A time urgency characterizes behavior not only in work time but also in free time. In fact, the character of leisure time is affected by work time. The two-week vacations common in the United States (compared to the average of four to six weeks in many other industrial countries) are directly affected by the other 50 weeks of work. Temporal rhythms of underload and overload affect life experiences other than work (Antonovsky, 1979: 187). A college professor who worked in a factory on his year of academic leave observed:

Except for shopping at supermarkets that are open all kinds of hours, I could hardly run errands, go see a doctor, or do anything in the community... I found myself torn between spending those few precious hours of waking leisure with my son, with my wife or by myself. I found myself, in short and with some important

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7 Some individuals adjust better than others; some prefer certain time cycles, and there are sometimes ways of arranging shifts so that workers have an opportunity to adjust. However, most workers do not have sufficient control over their work time to effect schedules compatible with their individual needs.
People who work in dull and restricting jobs tend to be less likely than those with interesting jobs to engage in "leisure activities requiring planning, participation and effort" (Frankenhaeuser, 1981: 492). Workers do not typically compensate for dull jobs with exciting, challenging leisure-time activities.

Not only may the rhythms of work time seep into the lunch hour, weekends, and holidays, but the physiological responses to work stress may also continue long after the workday is done. The physiological effects of work overload may spread to leisure hours, thus delaying their full impact (Frankenhaeuser, 1991). Many of us have experienced a form of work time carrying over into our free time when we are unable to adjust our sleep patterns during vacations and continue to wake up to an inner alarm clock geared to the memories of work time. The inability to unwind is accompanied by the hormonal system's inability to slow down, even in the absence of environmental demands. Thus, workers who have been working overtime show elevations of catecholamines not only at work but through the next evening as well. The process of unwinding may be accompanied by an increase in psychosomatic problems (Levi, 1981: 53).

The inability to relax during free time is also the consequence of media and peer pressures to consume frenetically. Although some people may shop for enjoyment, often free time ends up as rigidly scheduled as work time. The activity of consuming requires that commodities be bought, kept, and maintained. More time must be spent shopping, getting to sales on time, and having goods repaired, waxed, shampooed, trimmed, and polished. Because time spent consuming must to some extent be scheduled, leisure time is therefore regimented. Sports and amusements may also mirror the rhythm and movement of the work world. One observer commented:

Even days ostensibly outside daily routine, holidays, are occupied with "organized" sports and amusements which, far from being liberating forms of leisure facilitating participation in subjective temporality, are ritualistic reaffirmations of the daily grind, veritable sermons or morality plays on the value of efficient use of "on" time and the rewards of synchronized cooperation. Indeed, unplanned, "idle," or "non-productive," time, eagerly sought and jealously safeguarded in more subjective cultures, is experienced as malaise in machine culture. (Dye, 1981: 58-59)

A disciplined worker and a disciplined consumer go together hand in hand in our society.

So-called leisure time is often consumed by unpaid labor in the form of housework and the care of dependent children and elderly. In our society, this burden falls disproportionately on women. Parenting and housework are work, even though they are not socially recognized as paid, "productive" labor. These forms of work are characterized by recurring, boring, repetitious tasks; long hours; social isolation in the home; and many features, such as underload and overload, that characterize factory work (Doyal, 1995; Popay and Bartley, 1989). Working mothers thus carry a double burden from both paid work and housework (Hochschild, 1989; Schor, 1992). Furthermore, those household tasks for which women are responsible tend to be those that must be done daily at a fixed time, whereas men's household tasks (such as fixing the car) allow for more flexibility in scheduling (Frankenhaeuser, 1991).

In one study, male managers "wound down" physiologically more rapidly after leaving work than did female managers, indicating the continued work pressures of a "second shift" that women face. Similar results have been found for women physicians (Theorell, 1991). Another study concluded that if men's and women's roles were more equal and they spent their time in the same way, "women would experience better health than men, more consistent with their greater longevity" (Bird and Fremont, 1991: 126).

The standardization of work time (such as the practice of working for eight hours from nine to five) also means that many people are excluded from paid work, including mothers who cannot afford child care, elderly people who must rest more often, and disabled people who may not function as effectively on a nine-to-five schedule. Since the industrial revolution, there has been a trend to separate spheres of activity. Paid work is increasingly done outside the home; in earlier days it was often done at home. This segregation of activities of work and home, together with the standardized workday, makes it difficult or impossible for mothers and others who cannot function on "normal" time to participate in the paid labor force.

It would be simplistic to assume that the unemployed poor merely have time on their hands, without examining the quality of this time. The poor, both unemployed and employed, are unable to enjoy the privileges of time use that go with higher social class levels. For example, they spend a great deal of time waiting for various services in places such as emergency rooms, clinics, welfare offices, and courts. Such waiting can cost precious wages, especially because many services are not available after working hours. Middle-class people can take time off, and upper-status people can have the service brought to them (Henley, 1977). One's social position also influences the degree of access to other people's time and control over one's own use of time (Henley, 1977).

Elderly persons or people with disabilities sometimes find themselves in surroundings that overwhelm them because they are unable to function at the speed demanded. In the right context, however, they might still be able to function well. Older people's disorientation and inability to function are sometimes interpreted as signs of senility; others' inability to function at "full speed" may be seen as a sign of mental or social disturbance. Thus, instead of seeing these problems as responses

Despite the stress of this double burden, many women employed outside the home experience positive effects on health compared to women working only at home; the net health effects of the "second shift" thus are mixed (Hibbard and Pope, 1993; Lennon, 1994).
to environments that move uncomfortably fast or slow, we tend to treat them as personal, internal states of mind. When the environment of college students was experimentally sped up so that they could not maintain the pace, they also began to show irritability and the inability to function (Kastenbaum, 1971). Retirement and institutionalization lead people to experience “standard” time as irrelevant, thus atrophying time-related coping skills and contributing to behavior that may be incorrectly interpreted as evidence of senility.

An important relationship exists between time and health. The standard ways of socially scheduling activity often conflict with one’s personal pace or biorythms. A sharp discrepancy between the two will have an impact on one’s health. Scientists studying sleep and sleep disorders note the tension between the sociocultural organization of time and the rhythms of our bodies (Klinkenberg, 1997). Such a split between social time and our ability to keep up is prevalent in time-pressed, production-oriented societies. In a society as productive as ours, a shorter workweek with longer breaks, more flexible hours, and less time-pressed work should not be impossible. Despite two-day weekends and labor-saving devices, we seem to live in a world that is more time pressured than past societies and many present ones.

**SUMMARY**

Material environments and our interactions with them affect our bodies. Symbolic and social factors, however, may also influence bodies through neurohormonal and other physical changes, which in turn may even mediate the interaction between our bodies and the physical environments they inhabit.

Stress is not merely in the eyes of the beholder, nor are the ways in which people handle stressors merely a matter of our individual resourcefulness. The economic organization of a society, the various social pressures—such as time pressures—to which its members are subjected, and their membership in sociological categories such as class, race, ethnicity, gender, and age are very important considerations. In the next chapter, we continue to explore these ideas by looking at the emotional aspects of social relationships, power, and health.

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**Chapter 5**

**SOCIAL ORGANIZATION, HEALTH, AND ILLNESS**

Researchers placed blood pressure and pulse monitors on participants in one study and correlated the changes in these stress indicators with activities and social pressures throughout the day. The case of one hospital administrative aide exemplifies workplace stress.

“Her peak reading at the office—a diastolic pressure of 77—came in the morning when she was mediating a dispute between two secretaries. She hit this level again just before lunch when she was in that perennial secretarial bind: politely taking orders from someone who annoys you.

In this case, it was a patient, a tense, well-dressed suburban matron convinced that something was wrong with her despite repeated tests showing she was healthy. At that moment, there were two real emergencies going on—doctors were rushing in and out of the office to consult about a woman near death on an operating table, and a cardiac patient from another hospital needed to be transferred by helicopter to the medical center. In the midst of all this, Collins spent 15 minutes negotiating appointments for the matron; her voice remaining pleasant, but her diastolic pressure peaking and her pulse hitting 90.”


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- **Social Support and Health**
  - The Quality of Social Support
  - A Critical Appraisal of Social Support
  - Social Inequality, Support, and Health

- **Social Interaction in Dramaturgical Perspective**
  - Emotion Work as Stressful
  - Dramaturgical Stress and Social Inequality
  - Stressful Social Interactions
  - Dramaturgical Stress and Health