

Sociology 3308: Sociology of Emotions

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Lecture 28: Emotions and Health:

Tonight we will be considering the final topic in this course: the relationship, of any, between our emotions and health. To some extent we have already touched on this issue. For example, Thoits speculatively discussed the relationship between differentially distributed social stress, emotional deviance, success and failure at emotion management, and attributions of mental health problems. Similarly, I discussed the relationship between gender-specific grief cycles and health problems among homicide survivors. But tonight we will be examining such issues in more specific detail. Specifically, we will first examine the work of sociologist Peter Freund on stress, followed by the more medically-focused work of Howard Levanthal and Linda Patrick-Miller on emotions and physical illness.

Peter Freund: Social Performances and Their Discontents: The Biopsychosocial Aspects of Dramaturgical Stress

In this paper, Freund attempts to outline how performing and monitoring one's own performances and those of others can be stressful - whether one really is suffering stage fright on stage, or is acting on the stage of life. In doing so, he develops and refines earlier observations on what he has termed "dramaturgical stress" through the use of *spatial metaphors*, viewing dramaturgical activities in the context of psychosomatic space and social-physical spaces.

Freund's paper is organized as follows. He begins by (1) examining the use of spatial metaphors in some of Goffman's work, attempting to develop what he terms a "geography of emotions" and emotional relationships. In this regard, he asserts that dramaturgical stress emanates from threats to self-other or group boundaries, or to the security of informational preserves. He then moves on to discuss (2) the embodied aspects of emotions and social relationships; (3) He discusses emotional communication, psychosomatic space as well as dramaturgical stress in intra-psychosomatic space; Finally (4) he examines dramaturgically stressful encounters in social-physical space and their relationships to an actor's social space and the forms of social control imposed on him or her. In the end, dramaturgical stress is linked to health and illness.

(i) The Geography of Emotions and Emotional Relationships:

Freund notes that Goffman's work on the presentation of self contains strategies whereby actors and groups control information across the boundaries of their information preserves. Spatial metaphors in his work describe the ways in which space is used to sustain performances, maintain appearances, and in general manage the flow of information about individual actors, groups or institutions (e.g. front and back stage). There is a geography within the self, of self-other, and of inter and intra-group relationships that threads its way through his works. This even

includes physical barriers that control the flow of information. An increasingly wide range of activities is seen as carried out behind the scenes of everyday life (including the expression of intense, inappropriate or socially disruptive emotion).

Goffman introduced a sensitivity to space into sociological analysis by looking at the dramaturgical uses of space, but didn't make space a master metaphor due to his emphasis on the theatre. Nevertheless, Freund takes this as his point of departure and decides to use "space" as his master metaphor in order to examine mind, body and society relationships and at the use of space for organizing information about self and others. In his view, the organization of biopsychosocial and physical space is used by individuals as a way of sustaining a performance, or, in other ways, to establish boundaries and regulate the flow of information.

Dramaturgical work thus involves creating and maintaining boundaries between informational preserves, regulating the flow of information across boundaries, reading other actors' expressions, and sometimes attempting to "penetrate" their informational preserves.

Boundaries that act as barriers to perception may be established not only in physical and social space but through the expressive activities of the body (e.g. gestural-postural and internal neuro-hormonal activities embody methods of coping with potential threats). Expressive activities (facial expressions, postures and gestures) help to demarcate and clarify the relationship of body to environment and environment to body. Dramaturgical activities such as emotion work regulate the psychosocial and experienced bodily boundaries between self and others. They regulate the permeability of these boundaries and what information passes through them.

This simultaneously somatic and symbolic management of self-other boundaries has been overlooked in the sociology of emotions - especially in encounters where actors are co-present (e.g. Clark's work focuses largely on symbolic exchange without examining physical location, embodied gestures, and the relationship of actors to each other in social space). Information about groups, institutions, oneself, and others is managed dramaturgically through the establishment and regulation of boundaries in psychobiological, social and physical space (e.g. by segregating them in space). Such information is also regulated by scheduling performances and by collectively and intrapsychically "rewriting" history so that it is congruent with current definitions of self.

In a sense, many dramaturgical-emotional relationships can be represented topographically - as a map of relationships within the embodied self, and between the embodied self and others. Located in a sociophysical place, the feelings that underlie emotions are experienced positionally - in terms of merging and establishing boundaries in one's relationship with others. The structures of feeling are shaped by activities occurring within the context of socially organized emotional "spaces." Dramaturgical strategies of impression management, the reading of what others either intentionally or "unconsciously" make visible to us, are part of this topography that affects our conscious and unconscious subjective relationship to self and others. The display and concealment from others (and from oneself) of emotions and the use of

dramaturgical space interact with emotional modes of being and psychosomatic space.

Mind-Body and Performances:

Some emotions are visibly linked to physiological activity, and their physiological “responses” can be read (e.g. anger and forms of “bodily mobilization”). In others (e.g. pride), the physiological aspect may not be so visible and easily identified. Yet, since emotions have an outward, relational thrust, they may also be accompanied by motoric expressions in the form of facial expression, posture or gestures.

It's possible that potential somatic aspects accompanying feelings (e.g. pride) have not been systematically studied, although there have been crude clinical studies using imaging techniques and measurements of cerebral activity in relation to certain emotions. Nevertheless, these have all been performed on inactive, decontextualized minds and bodies. The bodily aspect of emotion that can't be reduced to sensation needs to be more clearly identified.

Thus emotions are not just cognitions nor are they clearly locatable in any specific sensation or biochemical change. Rather, they are *embodied* such that our entire being is actively engaged in an emotion. Emotions are thus a *fusion* of mutually modulating cognitive-physiological and behavioral aspects. Changes in one aspect may affect corresponding changes in another (e.g. changes in respiration or blood pressure). Indeed, it is possible that in addition to appraisal, bodily actions and relationships are in themselves sources of emotion. Situations which require co-presence occur in a field of bodily activities in which bodily activities may be geared into and detached from others. Discomfort or distress may thus be generated not only by the appraisal of self and others but by the psychosomatic postures one is maintaining and from the contextualized embodied experience of other actors' psychosomatic expressive activities. Emotions are thus embodied not merely in one's subjectivity or in an internal biochemical milieu but also in motoric activities such as posture, gesture, etc., and are embedded in the field - the socio-psycho-biological-physical spaces - of social relations.

Ways of attending to our bodies and others' embodied presence thus involve not simply cognitive coding-decoding of information but engaging the other person - a relation of moving bodies in space (e.g. anger is not just inner, but a spatial and enacted aspect of how we behave towards that person with whom we are angry. This embodied aspect of emotion may be fruitfully conceptualized in spatial metaphors. For example, it has been argued that the psychosocial characteristics of coronary-prone behavior are embodied and embedded in a social context - indicated in closed facial, postural and movement styles. Such styles re modes of engaging others (or keeping one's distance), that is, what Freund calls “emotional modes of being.” One's neuromuscular activity is an inseparable part of these modes, which, among other things, prepare a person for anticipated activity. Such modes of being intensify, dampen, ebb and flow in fields of action - social contexts which include others and their psychosomatic presentations. Feelings that may be expressed in such activity thus must be understood as emerging in the “fields of action” or social contexts in which persons act.

Emotional Information and Psychosomatic Space:

It is recognized that appraisals or interpretations may be essentially automatic - carried out rapidly below the threshold of wide-awake awareness. Phenomenological and ethnomethodological approaches similarly distinguish levels of consciousness as modes of attending to, turning towards, or moving away from the world, and interpreting it. Freund argues that the relative speed at which one grasps, perceives and interprets activity is an important dimension for differentiating levels and types of consciousness. Moreover, the agency that is so apprehending the world is not a disembodied mind, but an embodied actor.

Emotions in primates function as rapid and efficient modes of information processing. They rapidly focus on and coordinate information perceived on a number of simultaneous levels. They are ways of perceiving wholes encompassing expressed verbal-nonverbal information. They appear intuited because they derive from a number of levels and are rapidly processed. Since some emotional communications and responses occur more automatically than others, some expressions are easier to consciously modify than others (e.g. the startle reflex is difficult).

It's also possible that some emotional communication may not involve cognition, but body consciousness that does not involve higher functions (e.g. feeling afraid without understanding why). Indeed, some people's bodies may respond to stressors even when they are not consciously aware of them, or in spite of conscious appraisals (e.g. comatose patients increasing blood pressure when nurse present; nuclear physicists' bodies rebelling against their jobs in spite of conscious agreement). It may be that a pre-linguistic knowledge of feelings may take the form of somatic responses. Our bodies may express and respond to the existential situations in which they are embedded. Such a "language of the body" will be influenced by cultural and social conditions.

Emotion work as a dramaturgical strategy may involve, of course, consciously managing emotional expression or reshaping one's feelings. Yet, much emotion work on bodily expression must occur in the course of a short temporal lag between emotion as a cognitive-brain event to its expression in bodily behavior.

The appraisal activities of mind-body can occur on a number of different levels of consciousness and include our experience of others' psychosomatic expression - such as the position of their body in space. Emotional communication can be seen as the reciprocal signalling in which co-present actors coordinate subjective states (e.g. moods) and accompanying expressive activities.

Feelings and emotions motivate or move us. Mind-body may be open to others or may close boundaries, readying to fight or resist (e.g. the responses, expressions, and somatic responses involved in feelings of alarm, which may feed back and influence mood). In this process, space is the site of conscious embodied experience. Moods affect the character of this space, and relatively open or closed modes of psychosomatic being correspond to either positive or negative emotional styles (e.g. either those of mobilization or of tranquillity). One involves

heightened arousal and bodily closure; the other openness in relationship to the world. Postures of mobilization include activities such as hiding, guarding, walling off, ignoring, etc.

Under certain circumstances, opposing postures may be evoked simultaneously (e.g. ambivalence, double-bind social situations such as being obligated to attend social events with people one detests). Such states of “push me-pull you” psychosomatic posturing are responses to contradictory dramaturgical demands and represent an acute form of dramaturgical stress. Such stress is the result of one way of responding to social situations in which there is a profound disjuncture between the ways in which one desires to present oneself and the social context which demands an opposite style of self presentation and doesn't allow the actor to leave the field. Under such conditions the body may cope with a “push me-pull you” situation through spontaneous expressions of so-called somatoform or psychosomatic symptoms.

Some people develop coping strategies in distressful situations where a “sincere” or authentic performance that belies distress is demanded. Some people compartmentalize psychosomatic space, separating gut feelings from conscious feelings, dissociating between bodily activities of expression and internal function such as blood pressure (what Freund calls the “emotional false consciousness” that “all is well”). This occurs when emotion work disrupts the body's equilibrium and our ability to interpret embodied feelings. This split is accompanied by continued heightened physiological reactivity to stressful situations. Thus, an effective social performance may be successful on one level, and work for the short term, but on another level, may continue to produce negative feelings.

In this regard, it has been noted how people collusively and collectively reproduce oppressive and distressing structures, acting as their own agents of social control. Indeed, one might say that to some degree social differentiation is accompanied by subtle physiological differences. Under some conditions, such responses may become fixed and in turn affect the production of feelings (e.g. depression). This not only articulates some of the mechanisms by which society shapes our experiences of health and illness, but also has implications for how these experiences react back upon social classifications and social relations. The appearances and experiences of bodies act as concrete manifestations and prototypes of ideas about socially appropriate bodies which can then help sustain social divisions and inequalities.

This splitting of consciousness in psychobiological space facilitates the smooth functioning of hierarchical relationships even while they produce distress. Moreover, such chronically disavowing one's “heart” may also serve to blur the boundaries between self and other and one's ability to clearly experience social situations - making the blaming the victim process more viable (e.g. there is some evidence linking the denial of feelings to coronary heart disease). While Hochschild has argued that we may cope by redefining our feelings, the above suggests that feelings may be reworked only on one level of consciousness, but perhaps not on the somatic or body-consciousness level - thus “short-circuiting” the signal function of emotion.

The Theatre of Inner Psychosomatic Space:

The psychosomatic aspect of dramaturgical stress is not confined to encounters of co-presence. It can be carried out of the social space in which encounters occur, and into an actor's inner psycho-somatic space. Here, previous and anticipated stressful encounters may sink below or rise to the surface in the stream of our consciousness. In the process, accompanying somatic aspects (such as forms of arousal) are amplified and dampened in the course of the narratives that unfold in our heads. In these internal conversations (which may also be accompanied by motor and other activity) we amplify, subdue, refine or recast arousal states.

Emotions as modes of preparation for action regulate attention and motivation as well as being a medium for social communication. They help us process sensory information quickly and thus are very important tools in helping us detach or engage ourselves from social and physical environments. The strength or permeability of self-other or self-environmental boundaries are a function of our feelings. Emotions are also biochemical ways in which our bodies talk to themselves and in humans communicate information to self and others. In the mind's eye emotional encounters are reviewed, anticipated, and so on in tandem with ebbs and flows in the internal biochemical milieu and in the expressive activities of the body.

A universal experience that accompanied such embodiment is a sense of containment. This experience that our bodies are three-dimensional containers emerges in our encounters with the external world of objects and persons who resist us, give way, or whatever. Many of our cognitive schemata emerge out of bodily activities as we engage the environment. Similarly, our ways of apprehending feelings, the basis of emotion, emerge in encounters with others. Of course, how contained we feel depends on sociocultural factors such as forms of social control and the status relationships in which we find ourselves.

Initially our encounters with others consist of non-verbal gestures, touching and mirroring the other's expression. Our experience of physical containment leads us to develop an inside-outside orientation. Gradually our interaction with others also leads us to develop a sense of self and of emotional boundaries that emerge out of others' responsiveness or non-responsiveness. Such experiences form the ground of our sense of ontological security or insecurity (e.g. I feel surrounded by friends vs. I feel vulnerable). A sense of boundedness may also include a sense of being trapped inside oneself, unable to express feelings. In contrast, the opening of boundaries may be experienced in bodily feelings of, say, "overflowing with joy."

Importantly, the civilizing process involves increasingly complex emotional work demanded for proper functioning in a variety of social situations. Emotional skills of display, the management of our subjective states, and the reading of others' expressions come to be more pervasively used, refined and developed. This results in a heightened reflexivity, a sharper self-consciousness, and a growing inner space for imagination. This enlargement of internal psychological space is accompanied by an increased sense of self-other boundaries. Freund argues that emotion work and a sense of being contained in a vessel can be increasingly embodied, for instance, in particular distributions on the surface of the body of muscular tonicity and in neuro-hormonal changes in the internal milieu. This may accompany the increased sense of boundedness that is generated in the "civilizing" process.

With the forms that this process takes under particular social and economic systems (e.g. capitalism, patriarchy, etc.) Dramaturgical skills such as emotion work become more refined, pervasive and developed. The civilizing process thus creates a greater inner space for imagination: more room to brood, regret, anticipate. This enlarged state of the mind is paralleled by an increased sense of self-other boundaries. However, such increased ability to manage feelings and motoric expressions may also blur boundaries between one's own feelings and those demanded by a situation. The increased reflexivity allegedly characteristic of "postmodern" actors may have some somatic aspects, including consequences for our health.

Dramaturgical Stress in Sociophysical Space:

Since performing is generally part of social life, some dramaturgical stress is present everywhere. Yet in our dramaturgical society, one in which the manipulation of appearances is an important skill and a highly complex, self-conscious act, not only are emotions and bodily expressions very much controlled, but this very activity of manipulating appearances is, in itself, more stressful. It takes energy to contain feelings and actions, as well as to manage emotional communication and monitor that of others. Under what social conditions does such stress become particularly intense and chronic?

It has been suggested that such stress is heightened when one perceives the face presented is somehow inconsistent with the face he tries to maintain for himself and others. In such conditions where there is an estrangement between self and feeling, one's ontological security is threatened. This results from a breach of boundaries, the stress of keeping informational spheres apart and performances credible, and of managing and maintaining the flow of information in psychological, social-physical space.

Some actors are in social spaces that make them particularly vulnerable to such stress (e.g. those in subordinate positions in institutional contexts with strongly held-self-definitions). Lacking "status shields," such people are relatively unable to protect the boundaries of self nor counter the resistance or intrusion of others - hence resulting in anxiety and depression. Subordinate position combined with the forms of social control that prevail in a situation (e.g. the imposed and stressful emotion work demanded) requires that intense feelings be suppressed, denied, relegated to another sphere, and managed). This makes such actors vulnerable to dramaturgical stress and renders stress more intense. Responses to such stress may be somaticized - impacting the body (e.g. in muscular tension). Sociological minorities may often experience dramaturgically stressful encounters. Those who must cope with a social stigma by concealing their identity under a cloak of "normal" appearances face special stresses (e.g. gay people in the closet). Some subordinate positions may be more easily distanced (e.g. work situations vs. intimate, primary group relationships). This is not to say that both work and familial encounters do not possess similar structural features that make them both in differing degrees stressful.

In the dramaturgical work required to hide or redefine distressing feelings, new tensions

are created which must also be hidden from the audience. Such threats occur when masks crack or threaten to do so, when masks and feelings fuse, which then leads to a short-circuiting of one's feeling and the development of a false self. The ontologically insecure person sees his/her inner self as always potentially visible to others - and hence feels vulnerable.

Stress-related emotions such as anxiety, dread, anger and fear arise from the anticipation that a more powerful other will invade or encroach upon a person's self or space. This has been noted in studies of totalitarian societies, the shame and hiding characteristic of the "unspeakable dilemmas" in abusive relationships, etc. Oftentimes, the distressful containment of feeling required in such political contexts can only be expressed somatically. Repressing emotions in the face of contradictory family demands, as well as dealing with hierarchy, duties, demands, and office politics at work are also settings in which such things occur. Indeed, in this latter case, the growth of the service sector of the economy has increased the need for elaborate skills of self-presentation and emotion management - greatly increasing dramaturgical stress (e.g. as manifested in blood pressure and feelings of personal artificiality).

This has all been assisted by a tendency in our society to privatize disruptive feelings, and push anger, fear, anxiety, sexual feelings, and other kinds of distress behind the scenes of everyday life (and allowed only in controlled "out of context" circumstances in the commodified or bureaucratic setting of a professional's office).

Physical containment may support emotional containment. Since we cannot escape the co-presence of colleagues in workplaces or family members in homes, we are cautious in expressing disruptive emotions. Thus our performances take place at our location not only in social space but also in social-physical space. These influence our dramaturgical competence, the availability of "backstages," and our levels of security about our psychological space - and hence levels of dramaturgical stress.

The social organization of physical space is related to dramaturgical competence. The social status of actors influences their degree of control over this organization. Spatial arrangements provide access to backstages, and means of segregating audiences, which in turn influence the quality of dramaturgical stress. This makes it easier, for example, to sustain a consistent presentation of self and effective performance. The organization of space also influences the degree of surveillance to which an actor's performance is subject, and hence levels of stress. Again, actors in subordinate places are relatively more likely to find themselves in places where they are subject to maximum surveillance (e.g. employees, children). On another level, access to bodily space is also related to one's social status. Non-reciprocal touch, such as the right to be searched, is an example.

Notably, the inability of a subordinate individual to cope emotionally is often seen as a personal failure, not a systemic one. Stress research seldom challenges the emotion and feeling rules demanded by institutional arrangements. Indeed, even when people apparently "cope" successfully with dramaturgical stress, this coping may produce other costs for them (e.g. health). As well, since they are disconnected from the signal function of their emotions, they are

less likely to challenge stress-producing situations. They, in effect, embody their own social control.

There is certainly evidence that physiological changes - some of which may contribute to ill health or disease - are linked to social status (e.g. the research of Weiner, 1992 on a wide range of physiological changes in relation to rank among different vertebrate species). Thus, the activities involved in establishing and maintaining hierarchies have physical consequences - and their consequences may themselves serve to function as a means of social control.

Sociocultural situations in which such dramaturgical work is done influence the intensity, quality and quantity of emotional demands as well as how actors respond to them. Two features: (1) the form of social control that prevails; and (2) the relative social positions of the actors - are particularly relevant. Those likely to be in subordinate or stigmatized social positions (such as women, members of minority groups, and workers in lower-class service occupations) are particularly vulnerable to dramaturgical stress. This is not only because they may face heightened and often conflicting emotional demands, but also because, as with other demands that are made on individuals with relatively less social power, they lack resources for coping or resisting them.

Dramaturgical Stress and Health:

To what extent do the somatic aspects of stressful experience influence health? The tentative conclusion is that ill health results from a change in the normal rhythms of a subsystem incited by stressful experience. Disease, by contrast, occurs when a stressful experience interacts with a pre-existing regulatory disturbance or with a structural change.

For example, ill health may have no visible organic causes but takes the bodily forms of insomnia, hyperventilation, or irritable bowel syndrome. Disease (such as coronary heart disease), however, has a clear biological basis. This may interact with stress to produce rhythmic disturbances in the functioning of the heart (in combination with our bad North American diet). The point in this latter example is that stressful experiences do not linearly produce disease in most cases but act as a co-factor in persons predisposed to a disease.

It is important to note that the distinction between ill health and disease in this context do not suggest that some physical problems are psychological and others physical. Rather, reconceptualizations in the field challenge such distinctions, as well as the sharp divisions between ill health and the somaticized expressions of organic disorders. It is simply that in disease a more complex web of causation prevails, with stress acting in conjunction with a number of other factors (including possible genetic vulnerabilities).

Hence, the relationships between ill health, disease and stress (including dramaturgical stress) are neither linear nor unicausal. While most analyses focus on the internal milieu and on single neuro-hormonal rhythms, Freund suggests that a conception of the body actively engaged with its internal and external environment is needed. Such a conception may help us to

understand how, given their unique predispositions and history of experiences, “organisms” may either respond to stress in ways that allow them to remain healthy, or be transformed from a state of health to one of illness and/or disease.

One key factor here is the degree to which the organisms’ body is open to the world. Those who mature socially (such as humans) are more plastic, and hence they are by their nature more open to the world. Between the brain and environment of such creatures is the active body - that which communicates mood, intentions, etc., and which attends to the environment. Such exchanges occur when we draw closer to, engage with, move away from, attend to, and brace ourselves against others in a social field of active bodies. In this context, there is an inevitable tension between stark, alienated individuality and absorption of self into others’ existence. The experience of this dialectic keeps an individual’s psychology emerging by sustaining our proper sensitivity to the world of others.

Significantly, dramaturgical strategies regulate the psychosocial-biological and physical boundaries, their relative permeability or impermeability, and in general the flow of information across them. The ability to manage these boundaries is essential to our security, and likely to our health. It is suggested that the principles - or geography - of information exchange here are significant. These spatial concepts help link various levels of information exchange in biopsychological, social and physical space to understand the changing interaction of embodied actions.

Yet, whether conceptualized as different levels of communicative activity, disordered communication, or informational incongruity influencing immunity vs. vulnerability to disease, the problem remains how to link the symbolic and biological messages. Indeed, treating both biological and symbolic messages as information may gloss over basic qualitative differences between types of information and how they may be transformed one into the other. While this is problematic, and grounds for further research, the spatial metaphors discussed here may help unite individual performances in the form of emotional conduct, embodiment and social-cultural context. How helpful these metaphors are is a matter of theoretical debate and empirical study.

**Howard Leventhal and Linda Patrick-Miller:
Emotions and Physical Illness: Causes and Indicators of Vulnerability**

The growing body of data on the relationship of psychological and emotional factors to physical health appears to focus on two views: (1) a causal perspective (i.e. emotions as mediators and/or causes of illness); and (2) an outcome perspective (i.e. emotions are outcomes of illness). Really, these seemingly distinct perspectives are two sides of the same coin, since emotion and illness are linked by complex, bidirectional processes. Indeed, a third view is also possible: an indicator perspective (i.e. emotions as indicators of systemic vulnerability to disease, neither active in nor causal to this vulnerability).

The *causal* perspective posits that emotional processes can function as antecedent determinants of illness. This connection can be direct or indirect. For example, the relationship of emotional activation to cardiovascular disease appears to fit the direct pattern (e.g. interpretations of the social environment as competitive, hostile and threatening, and expressive behaviors provoking such responses from others, characteristic of people with Type A personalities provoke neuroendocrinological reactions increasing cardiovascular activity, blood pressure, heart rate, progressive arterial damage, and vulnerability to heart attacks and strokes.) Major negative life events can then easily overload an already compromised cardiovascular system.

Such causal connections can also be more indirect, such that the activation of emotional processes leads to behavioral changes that induce disease. Depression, for example, can lead to a variety of self-medicative, self-stimulative and risk taking behaviors (e.g. men drinking; women smoking). These behaviorally introduced pathogens can then produce physiological changes leading to serious chronic illness (e.g. cirrhosis of the liver, lung cancer).

The *outcome* perspective, in contrast, contends that disease itself is the causal antecedent to emotion. Again, this causal pathway could either involve direct physiological links or indirect, behaviorally mediated changes. This perspective has been important in firming up the methodology of studies seeking direct causal links between emotions and illness (e.g. were “predisease” emotions really the consequences of preclinical disease physiology?) It has also been important in research examining the factors mediating emotional adjustment to illness (i.e. how coping procedures influence the impact of disease on functioning and the consequences of these processes for emotional status/quality of life). Finally, the outcome perspective has been important in its research focus on the direct pathways through which disease processes, particularly immunological, have impacts on the neuroendocrine system, producing behavioral, cognitive and mood effects. This not only demonstrates that the connections between emotion and disease are bidirectional, but provides the clearest available pictures of these paths.

The *indicator* perspective, finally, proposes that conscious affective processes are indicators of somatic resources. Reports of negative and positive emotions are largely independent and respond to different underlying mechanisms. Reports of high levels of energy, for example, appear to indicate availability of resources, and reports of negative affect seem to indicate reduced resources for combating physical challenges. As indicators, emotions have to causal significance, but merely signal things like vulnerability or strength. For example, Being depressed or fatigued can mean that one is vulnerable to attack, and being happy or energetic can mean that one is able to fend off attack. Yet it need not mean that depression or fatigue is actively causing depletion, nor that depletion is a consequence of a psychological disorder or a co-morbid physical disease.

The communicative Function and Structure of Emotion:

Viewing emotions in any of the three ways above doesn't necessarily mean that these are

separate or discrete classifications. An emotional reaction can serve any one or any combination of these functions (e.g. anger and hostility may be intensified by disease, and its symptoms may create a further sense of victimization and anger activating physiological processes increasing the risk of coronary events. Emotions may simultaneously signal depletion of resources, and contribute to highly threatening interpersonal situations).

Emotions can make an active contribution to behavior even when serving as indicators of vulnerability and making no direct connection to disease processes. Chronic depressed affect may be an indicator of reduced resources, but it can also result in social isolation; chronic hostility can affect the heart, but it can also result in counteraggression and job loss. In neither case, however, need the physiology accompanying these emotions make a direct contribution to disease processes. These relationships of emotion to disease are made possible by the structure of the underlying emotional mechanisms.

The Multicomponent, Hierarchical Structure of Emotion Mechanisms:

Emotion theorists have made a strong case for the multicomponent, hierarchical structure of emotion mechanisms and the role of emotion in both interpersonal and intrapersonal communication. These features are important because they help us understand the bidirectional nature of the emotion-illness link, and why and how emotions can have indicator functions with respect to disease processes.

Both physiological and psychological analyses agree that emotional processes are complex and hierarchically arranged. Instead of seeing this as methodological reductionism, the authors believe that physiological and psychological analyses are two perspectives or languages for describing the same phenomena, each providing a view of emotional processes.

Hierarchical models are well represented in psychological models of emotion. Early proposals were for a hierarchical processing system comprised of the following three levels: (1) sensory-motor (the primitive emotional seeds defining the raw “feel” of primary emotions); (2) emotion schemas (associative processes connecting and expanding the range of stimuli and responses linked to primary emotions); and (3) a higher-order executive mechanism for verbalizing and regulating emotional experiences and their situational elicitors.

If a degree of parallelism can be assumed between physiological and psychological structures and functions, it would be reasonable to expect that patterned central nervous system activity is the basis for conscious emotional experience. Sustained peripheral autonomic activity can also promote physiological processes that damage organ structure and increase susceptibility to disease.

Dissociation of conceptual or executive processes from schematic, associative processes is common in a hierarchical emotional system, as verbalizations need not activate the schematic or expressive-motor level. Dissociation can also result from active processes, as specific mental procedures designed to control emotional experience may uncouple the schematic central

nervous system activity that generates emotional experience from its peripheral physiological processes (e.g. repressors suppress negative emotions on one level, but they may continue unabated on the level of peripheral, autonomic accompaniments of the initial negative affect). Such dissociative processes will play an important role in the analysis of the causal and indicator functions of emotion.

Models for Direct Causation:

Much research has focused on direct causation between emotion and disease. It is unclear, however, how well the data support this outlook. After examining some of the major findings, we will consider how the indicator framework accounts for these. The proposed view is that the primary function of emotional processes in emotion-disease links is as indicators of activity within the system, and that this indicator function or property is a product of the bidirectional nature of the system.

Three basic criteria appear necessary to support a direct relationship between emotion and disease: (1) a specific emotion-disease linkage; (2) the exclusion of potentially causal third factors; and (3) a mechanism consistent with the known pathophysiology of the disease.

Long-term longitudinal studies predicting longevity from measures of emotional distress during adolescence and early childhood are often believed to provide the strongest evidence for a causal role of emotions in the generation of disease (e.g. the physiological processes associated with emotional distress either cause disease or undermine bodily defenses to it). The perceived strength of these studies lies in the substantial temporal gap between personality assessment and mortality. However, the problem is that the mortality predicted results from all causes - not just disease. This is insufficiently specific, failing to identify specific emotion-disease links nor their mechanisms, and hints at the possibility of other factors being involved.

The connection of Type A behavior/hostility to cardiovascular disease provides what many regard as the strongest evidence for a direct link of a specific emotional pattern to a specific disease, and explains how these are linked through physiological processes. Indeed, the link between weakened cardiovascular systems, major life traumas and cardiac episodes is further strengthened since there is no concurrent link between such traumas and non-cardiac mortality.

Such findings are impressive because they present a plausible picture correlating psychological to physiological processes for both the development of the disease conditions that compromise the system and the events initiating critical disease episodes. However, there are weaknesses with respect to the role of emotion in the development of the arterial changes that form the bases for the later vulnerability. While Type A behavior is generic, the specific emotion connected to the arterial changes was only later specified. This causal model also requires persuasive connections between the psychological hierarchy associated with hostility and Type A behavior and the physiological hierarchy associated with coronary heart disease. The psychophysiological pathways underlying these relationships are complex, leaving abundant

room for third factors to account for associations between the psychological hierarchy defining hostility/Type A behavior and the physiological hierarchy associated with heart disease (e.g. genes promoting the attachment of arterial-wall damaging blood cells, diet, smoking, the generation of self-fulfilling life situations, etc.). Thus, the operation of a third factor is not inconsistent with the causal hypothesis. If both the third factor and causal processes are true, anger and/or hostility indices would serve both as indicators of vulnerability and as markers of active contribution to the disease process.

The nature and duration of anger pose an additional challenge to the causal role of emotion: the physiological reactions accompanying anger are relatively short in duration. Moreover, while chronic hostility may exhibit many of the physiological properties associated with heart disease, there is a real question as to whether it is in fact an emotion at all (i.e. it may be a “response style” or personality trait, and hostile people may not necessarily see themselves as feeling angry). Still, what may be going on is that hostile behavior patterns may be one aspect of a hierarchical system, reflecting a schematic behavior pattern. The physiology of anger may be evoked whenever hostile and competitive thoughts and expressions are engaged, even in the absence of conscious experience of angry emotion.

Although it may seem that distinguishing between conscious emotional episodes and less conscious response styles may be splitting hairs, these differentiations may be important for changing behavior to lower the risk of heart disease. Different interventions may be required, and their value is shown in studies demonstrating that reductions in behavioral and emotional components of the Type A construct decrease biological risk factors for both heart disease and risk of reinfarction and mortality in post MI patients.

Models for Cancer:

Cancers, like heart disease, are also etiologically multifactorial and developmentally multiphasic - only considerably more so. This disease complexity has rendered investigation of direct causal linkages between emotion and cancer vulnerable to many of the same challenges: the difficulty of making specific connections between the emotional hierarchy and the physiological hierarchy, as well as “third-factor” interpretations. What renders the study of emotion and cancer different from that of heart disease, however, is the degree of involvement of the immune system, and the window that this affords to view the bidirectionality of the processes: emotion to disease and disease to emotion.

The Indicator Function of Emotion in a Bidirectional System:

The difficulty in demonstrating distress/emotions as causal antecedents of illness contrasts with the ease with which we can see the effects of illness on behavior. When we become very ill with an infectious disease, we become febrile and shiver, lose our bodily appetites, curl up and sleep. These are part of our systemic defense, preparing our body to concentrate its energy on fighting the infection. These behavioral changes not only enable the body to create an environment hostile to the infection (e.g. fever), but also limits the behavioral

system's competition for bodily resources by making us "sick."

Illness-induced moods are typically characterized by fatigue, depression or distress - both in minor and serious illnesses. Reported moods are highly sensitive to immune system activity (e.g. immunization and depressed mood, particularly among individuals whose ability to respond to the stress of the immunization might be compromised). This supports the indicator model of emotion. Studies of the relationship of affect and more severe, life-threatening illnesses are also consistent with the indicator function of affect (e.g. the association of "helplessness" and "passive acceptance" with poorer prognosis in cancer patients). Animal studies are even more suggestive of a link between uncontrollable stressors, depressive states, increased tumor growth, low immune system response, and susceptibility to disease in the first place. While the specific causal links among these factors remain unproven, the data are consistent with an indicator function of emotion.

Immune system activity is energy-consumptive and must draw upon the organism's resources. This reduces the resources available for other efforts. Both large and small immune stimuli are stressors, and the responses they generate include central depletion of the neurotransmitter norepinephrine - the physiological underpinning of psychomotor fatigue and depressed affect. Thus, mood and emotional experience appear to be the domain for the conscious representation of the physiological processes involved in somatic energy level, distribution and use. Such mood effects are indicators, therefore, of the availability of resources for combating disease processes, and they can predict specific disease outcomes. The disease outcomes they predict and how well they do so depend upon a variety of contextual factors, primarily the presence of a specific compromised organ system.

Depression, for example, is associated with increased risk of all-cause mortality in epidemiological studies, higher frequency of problems following coronary artery angioplasty, and higher risk of mortality following heart attacks and bypass surgery. Some argue that the fatigue associated with depression is the vital factor here, while others suggest that depressed mood/exhaustion may serve as an indicator of lack of resources to sustain or rehabilitate a patient's compromised cardiovascular system rather than playing a causal role. That the subjective sense of "exhaustion" appears to be the risk marker of vulnerability predicting systemic loss of vitality and resistance to disease again emphasizes the value of identifying critical components within each emotional domain and relating them to a specific physiological disease stage.

New Directions: Infectious Diseases and Wound Healing:

Much of the difficulty in examining the causal relationship between emotion and disease can be linked to two factors: (1) the prolonged and multiphasic developmental disease course; and (2) the difficulty of adequately controlling causal agents. Yet two recent areas of study, infectious disease and wound healing, hold great promise in elucidating emotion to disease causal relationships because of their inherently shorter time course and their opportunity to control exposure.

Studies examining the relationship between life-stress and the development of infectious disease provide some of the strongest evidence to date of a link between emotion and disease. Studies of examination stress in medical students, marital strain in spousal pairs, and depression among Alzheimer caregivers have demonstrated effects on a variety of infectious illness outcomes. There is also evidence in a controlled, double-blind study that stress reduces resistance to the common cold.

Similarly, using a wound-healing model, researchers have demonstrated that measures of stress correspond to prolonged healing time of experimentally produced puncture wounds in dental students and Alzheimer caregivers.

In both cases the proposed direct causal mediator of the outcome relationship between stress/emotion and illness is suppressed or dysregulated immune function.

These studies are impressive in their degree of experimental control and specificity of disease outcome. Thus, close attention must be paid to other questions they raise, such as the strength of the causal relationship and the implications of their findings. First, the effects of stress on infection are of modest size, even though the level of pathogen exposure is high and uniform across all participants. Far smaller effects of stress might be expected in real-world settings. In contrast, the size of the effects in wound-healing has been rather impressive. This may reflect the very different outcomes measured. As in the studies of stress/emotion and cardiovascular disease, the clearer and stronger impacts of stress are seen on compromised systems.

Second, it appears that even in disease states with a short developmental course, stress duration can be significant. Although both long-term and short-term stressors are correlated with prolonged wound healing, stress of at least 1 month is necessary to increase the risk of developing a cold.

Finally, unlike the heart disease and cancer studies, the data from these studies have generally related measures of stress, rather than measures of emotion, to disease acquisition or outcome. Although this raises the question of emotion per se in causal models, it is not inconsistent with the indicator perspective. Rather than inducing disease vulnerability through immunosuppression, emotion may serve to communicate to self and others the depletion of bodily resources by life event management or normal again processes.

Genes as “Third Factors” in Indirect Causation:

In this evaluation of causal models, genetic variables have been noted as possible “third factors” that might account for the presumed direct pathways from emotion to illness (e.g. a gene might be responsible for the association between hostility and arterial damage by promoting the migration of arterial wall-damaging cells as well as the creation of hostility-evoking social conditions). Such hypotheses are not wild speculations, since recent studies have uncovered genetic variables underlying the association between depression, the dopamine 4 receptor gene,

tobacco use, cardiovascular disease and various cancers). Similarly, genes have been identified that affect the efficiency of dopamine reuptake. Individuals with faulty reuptake mechanisms have more dopamine in their reward centers and are less likely to use smoking to activate these centers. Such individuals are less likely ever to smoke, are older at beginning the habit, and are more successful at quitting - and these effects appear both robust and hold across age and ethnic groups.

Such data clearly demonstrate that genetic variables can be important “third factors” contributing to the relationship between emotion and disease through their effects on risk behaviors. They are, however, only first steps in exploring the ways genetic factors may contribute to the relationship of psychological variables (personality factors and emotional states) to health outcomes. Two points about these data are important. First, the genetic factors identified account for but a small percentage of the variance in the outcome studies (2%). Secondly, investigators in this area assert that psychological factors mediate the relationship of genetic variables to illness and behavioral outcomes (although the authors here take issue with how this term is used).

It would be premature and inappropriate to assume that personality factors and emotions are only indicators and do not contribute either directly or indirectly to disease outcomes. A gene in combination with environmental factors sought and created by psychological variables (e.g. selecting risk-seeking friends) may create a complex series of relationships for the promotion of disease.

Conclusion: Emotion as Communication and the Emotion-Disease Link:

Evolutionally, emotional processes emerged in social animals to facilitate interpersonal communication and regulate group behavior. They were built upon basic neurobiological systems that distribute bodily resources for the performance of survival behaviors. For humans, emotions are also important in intrapersonal communication, telling us about the state of our bodily behavioral systems (e.g. whether we are ready to fight, flee, rest, recuperate, etc.) This we regard emotions as real, and, when carefully assessed, valid indicators of the state of our social-behavioral systems. But this doesn't mean that emotions will or should predict disease outcomes. Experientially elaborated, multilevel emotion systems respond to a wide variety of external and internal events and their meanings. Their validity as predictors of specific disease outcomes, cognitive activities, and social behaviors depends upon the person and context. Fatigue/depression following a heart attack may predict mortality, but may have no relationship to mortality in healthy elderly people. Indeed, negative affect in elderly women, reflecting social involvement and responsibilities, actually predicts survival. In both cases, however, negative affect may still adversely affect quality of life and interpersonal behaviors.

The search for direct effect, and the idea that controlling our thoughts, feelings and actions can help us reduce the risk of disease can mislead us by encouraging false hopes. But it can also inform us by encouraging research on the bidirectional connections between emotions and illness, linking biological and psychological theory. The focus on indicators is designed to identify the important roles that psychological factors can play in this investigation, and also to

discourage a single-causality model that obscures the role of emotion in the multifactorial models of the onset, development and outcome of the most prevalent life threatening diseases.