

1978 Eleanor Clarke Slagle Lecture

Toward a Science of Adaptive Responses

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An “asset almost peculiar to occupational therapists is their high tolerance for puzzlement, confusion and frustration.” (1) Ten years ago this was the opinion of Dr. J. S. Bockoven, one of our profession’s most vocal admirers. Today one might argue about the tolerance, but who could dispute the puzzlement, confusion and frustration as we look back on a good many years of effort to define practice, to structure theory, and to build philosophies of occupational therapy.

Need for a Comprehensive Theory

And, as we look toward an era of increasing specialization, we are soberly aware that, without a unifying theory to insure cohesiveness, specialization could easily become fragmentation. In fact, back at the time when the profession’s definition began “Occupational therapy is any activity, mental or physical, . . .” (2), recreation, art, music, and dance all fell under the rubric of occupational therapy. The responsibility for the fact that these modality-based specialties have become separate professions can be assigned in large measure to the lack of unifying theory.

It seems readily apparent that splintering into small professions results in watering-down of job development effectiveness, the scattering of progressively scarcer financial resources for education, and the loss of political “clout.” The economics of the health care delivery system will not indefinitely support professional proliferation and duplication of effort. To allow future specialization to result in further fragmentation might well be suicidal. Therefore, we need a framework that will give specialists the bond of a common structure.

We must also cope with the fact that today’s consumers, far more sophisticated than in the past, expect to understand what they are paying for. They will no longer accept “on faith” what they are told. This underscores the need for a coherent theoretical model

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understandable, not just to the professional initiate, but also to the consumer. We may develop complex theories, but, in order to be really useful, they will need to be based on a straightforward structure that can be widely understood, and is clearly related to the client's life functions.

Difficulties in Constructing a Science of Occupation

As a prelude to an attempt to identify a usable theoretical framework, let us look at the roots of some of our difficulties in achieving a science of occupation. One of the difficulties is related to the fact that occupational therapy was born of common sense; and common sense is, by definition, "what everyone knows." Everyone knows that it is a good thing to keep busy. There is the old proverb, "The devil finds mischief for idle hands." Carlyle said it with great feeling, "An endless significance lies in work; in idleness alone is there perpetual despair." (3) One must reach far down on the evolutionary ladder to find organisms that are not active, that simply exist. Occupation, or employment, or activity, is quite literally bred in our bones. Occupational therapy, then, deals with purposeful behavior—with people *doing*. But isn't this what people are engaged in during most of their waking hours? It is hard to see what is significant about such a commonplace fact of life, and that is precisely the problem, or one of them—something so ever present is hard to grasp conceptually. Whitehead is credited with saying that the more familiar something is to us, the more difficult it is to subject it to scientific inquiry (4). As a commonplace example, consider how many eons must have gone by before Man even thought to wonder about the nothingness that surrounded him. A great many more eons probably passed before Man realized that it was *not* nothingness, and named it atmosphere. I am suggesting, then, that the very universality of the filling or occupying of time with purposeful behavior has made it difficult to form concepts that would help us to construct a theory or science of occupation.

Who has not had the experience of trying to explain occupational therapy to someone, only to realize that people think they know all about it because, of course, they have *experienced* occupation and activity. They are thinking about it in everyday terms, and the therapist is, hopefully, thinking about it scientifically and analytically. So, although words are exchanged, frequently no communication takes place.

Another problem in constructing models is the difficulty that therapists sometimes have in communicating with each other because of the many levels on which purposeful behavior can be organized. One can talk about the effects of activity on the biochemistry of cells, or about its place as an essential component of neurodevelopment. Purposeful behavior is also basic to cognitive processes; and on the still broader scale of cultural anthropology, an individual's role in the cultural milieu can be thought of as determining purposeful behavior. Conversely, behavior may determine cultural roles. So, whether one looks at biochemical Man, psychological Man, social, economic or ecological Man, purposeful behavior is inextricably woven into the total fabric of human function. However, if one therapist looks at occupation solely in terms of its psychological implications, while another looks only at the cognitive issues, and a third describes chiefly the neurophysio-

logical consequences, a situation results much like that of the blind men examining the elephant. One described the leg, another the ear, and another the trunk. Finally, they were convinced that they could not possibly be talking about the same creature. Certainly an outsider would be hard-pressed to find a principle unifying work simplification, sensory integration, hand splints, and acceptable outlets for aggression, to name just a few of the topics with which therapists may be concerned.

Naturally, attempts have been made to deal with this disparity of viewpoints. Development frameworks are appropriate for many clients, but are not particularly helpful with the normally developed adult who is suddenly faced with trauma or disabling disease. Other models deal with occupation in terms of chronic conditions or the sequelae of disease—a rehabilitative context. These are not readily applicable to developmental problems or acute, as contrasted with chronic, conditions. Few models that I am aware of have spelled out what it is that is peculiar to occupational therapy as contrasted with physical therapy or vocational counseling, for example. What *is* that factor which makes occupational therapy so uniquely valuable that, as Dr. Reilly says, if the profession were to disappear tomorrow, it would have to be quickly reinvented? (5)

General systems theory teaches that systems share common features, that large inclusive systems tend to recapitulate the features found in more specific units. As Laszlo says, “A system in one perspective is a subsystem in another.” (6) It seems, then, that our task in finding a theoretical frame for occupational therapy is to identify a level of system that is not so specific as to shut out some of our areas of specialization, nor yet so general as to include a great many more areas than are applicable.

In short, in order to satisfy the profession’s current needs, a theory or science of occupational therapy should provide:

1. A unifying concept that will apply to all areas of specialization;
2. A framework that will clearly distinguish occupational therapy theory and techniques from those of other disciplines;
3. A model that is readily explainable to other professionals and to consumers; and
4. A theory that is adequate for scientific elaboration and refinement.

Adaptation as a Unifying Concept

While mulling over some of these considerations, I read Konrad Lorenz’s recent book, *Behind the Mirror: A Search for a Natural History of Human Knowledge* (7). Lorenz deals essentially with the evolutionary and individual processes of adaptation that are involved in Man’s active acquisition of knowledge and techniques. I was struck with the implications of his work for occupational therapy. Then Kielhofner and Burke’s recent review of the ideological history of occupational therapy (8) drew my attention to Dr. Ayres’ phrase, “eliciting an adaptive response” (9), which seemed a succinct and accurate description of what an occupational therapist does. I was at this time going over the occupational therapy literature, and suddenly the words *adaptation* and *adaptive* seemed to leap out from almost every page. In fact, few of our professional articles fail to mention adaptation, regardless of

the author's specialty or point of view. I was struck, like Cortez, with "a wild surmise" (10); could the *adaptive process* be an adequate synthesizing principle for our profession? Is it too nebulous a concept to be useful? Surely it is too simple an idea—or is it? Has its very familiarity, like that of the word *occupation*, blinded us to its true significance?

Certainly the words *adaptation* and *adaptive* are well known to us. We advertise on bumper stickers that occupational therapists are adaptive; we have large investments in adaptive equipment; and assumptions about adaptation are implicit in our literature. Adolph Meyer began his treatise on "The Philosophy of Occupation Therapy," in 1922, by defining disease and health in terms of adaptation (11). But I have not found evidence that we have rigorously analyzed the concept or used it consciously to explain our functions in any broad sense. Perhaps it is time that some of our implicit assumptions about adaptation be made explicit. Only when these assumptions are articulated can their validity be examined through research.

At the outset we must distinguish between adaptation as an evolutionary concept and the process of individual adaptation. Evolutionary adaptation refers to changes in the structure or function of an organism or any of its parts that result from the process of natural selection (12). Natural selection, in turn, is the process by which a differential survival advantage is transmitted to successive generations. The process of evolutionary adaptation is very slow, requiring at the minimum hundreds of thousands of years for significant changes in form or function to occur.

Individual adaptation refers to adjustments made by the individual that primarily enhance personal rather than species survival, and secondarily contribute to actualization of personal potential. Tinbergen says, "Adaptedness is a certain relationship between the environment and what the organism must do to meet it." (13)

The idea of using adaptation as a model in a health-related profession is reinforced by Dr. Rene Dubos in his book, *Man Adapting* (14). He says "states of health or disease are the expressions of the success or failure experienced by the organism in its efforts to respond adaptively to environmental challenges."

Rappaport, the general systems theorist, says "Science is clearly a systematized search for simplicity." He adds, "Seek simplicity, and distrust it." (15) I would invite you, then, to keep a healthy skepticism as we explore the concept, a relatively simple one, that the adaptive process constitutes the core of occupational therapy theory, and that specific attributes of adaptation are also the significant and characteristic attributes of occupational therapy. This will make explicit and specific and testable some of our heretofore unexamined assumptions.

Characteristics of the Adaptive Process

Initially, let us discuss four specific features of individual, as opposed to evolutionary, adaptation. The *first* characteristic of adaptation is that it demands of the individual a positive role. The adapting person is defined as "adjusting himself to different conditions or environments." (12) In doing this he is acting, not being acted upon. An adaptive

response cannot be imposed, it must be actively created. To quote Nobel prize-winning ethologist Tinbergen again, “Living things do not move passively through the physical processes of the environment; they do something against it.” (13) Active participation of the client in the treatment process has long been recognized as characteristic of occupational therapy.

Alexei Leontiev, Chairman of the Psychology Faculty of the University of Moscow, reminds us that “Even seemingly simple human functions develop as an interaction between sensory stimulation from the environment and the *person’s own activity*.” (16) (Italics by this author)

Even unprofitable or maladaptive adjustments to change are actively entered into. Withdrawal, for example, which is often considered a negative condition, is actually an active response sometimes appropriate, sometimes maladaptive.

Secondly, adaptation is called forth by the demands of the environment. The challenge of something the individual needs or wants to do—obstructed by change or deficit in the self or the environment—calls forth a specific adaptive response. We could say that occupational therapy consists of structuring the surroundings, materials, and especially the demands, of the environment in such a way as to call forth a specific adaptive response. Another way of saying this is that occupational therapy uses the demands of tasks or other goal-oriented activities in a specially structured environment to trigger the unfolding of a need adaptation.

Among the healing sciences, occupational therapy is unique in its utilization of the demands of the real-life environment. An adaptive response cannot truly be said to have occurred until the individual consistently carries it out in the course of ordinary activities. Thus an amputee may practice opening the hook of the prosthesis over and over, but has not truly adapted to it until the prosthesis is used habitually in a daily routine. The occupational therapist uses this knowledge by providing the amputee with many real-life activities in which to use the prosthesis. The therapist knows that pure exercise, no matter how repetitive, often does not generalize into daily activities, and therefore fails to be adaptive.

This brings us to the *third* characteristic of the adaptive response, namely that it is usually most efficiently organized subcortically, and, in fact, often can *only* be organized below the conscious level. Conscious attention to a task or an object permits the sub-conscious centers to integrate and organize a response. Dr. Yerxa, in her 1966 Slagle Lecture (17), gave an example that can hardly be improved upon. She said, “A year ago I helped evaluate a brain damaged client’s function. She was asked to open her hand. No response occurred, except that she was obviously trying. Next she was moved passively into finger extension while the therapist demonstrated the desired movement. This time the client responded with increased finger flexion. In frustration she cried, ‘I know, I know.’ Finally she was offered a cup of water. As the cup was perceived, her fingers opened almost miraculously to grasp it.” It would be hard to overemphasize the importance of the therapist’s using his or her cognitive powers to structure situations that will elicit a subcortical adaptive response from the client. We tend to rely too much on the client’s cognitive processes.

Another example of the importance of subcortical adaptive learning is less familiar to the therapist, but popular with the sports enthusiast. It is to be found in such concepts as “inner tennis.” Gallweg, author of *The Inner Game of Tennis* (18), says, “There is a far more natural and effective process for learning and doing almost anything than most of us realize. It is similar to the process we all used but soon forgot as we learned to walk and talk. It uses the so-called unconscious mind more than the deliberate “self-conscious” mind, the spinal and mid-brain areas of the nervous system more than the cerebral cortex. This process doesn’t have to be learned, we already know it. All that is needed is to unlearn those habits which interfere with it, and then to just *let it happen*.” This approach recognizes the frequently *disorganizing* effects of analyzing consciously what should be automatic sequences of movement.

I stress this point because it is another essential reason why occupational therapists use purposeful activity instead of exercise: namely, that tasks, including crafts, or other goal-directed activities, such as play (where the goal is fun), focus attention on the object or outcome, and leave the organizing of the sensory input and motor output to the subcortical centers where it is handled most efficiently and adaptively. I am suggesting, then, that the distinguishing characteristic of occupational therapy, derived from a similar truth about adaptation, is that *there is always a double motivation*: first, the motivation of the activity itself—catching the ball, creating the vase, making the bed; and the second motivation, recovering from illness, maintaining health, preventing disability—in short, adapting. Now no *animal* recognizes the need to “adapt.” It sets out to do something specific—escape a pursuer, or find food. The immediate objective provides the motivation. Adaptation is a secondary and unrecognized goal. But in dealing with humans we need to recognize that the double motivation of therapeutic activity may or may not need to be brought to the client’s awareness, depending on age, cognitive function, and so forth. The therapist should see to it, however, that other professionals and the client’s family are made aware of *both* motivations, and of how the direct motivation of the activity subserves the indirect, but *primary* motive of therapy.

The implications of the foregoing definitions of the nature of occupational therapy practice are important in light of certain current problems. As mentioned earlier, the profession has been concerned with role definition—how to delimit the boundaries that separate our practice from that of physical therapy or other professions. In a recent report of an American Occupational Therapy Foundation board meeting, to which Washington area therapists were invited, concern was expressed about occupational therapists “infringing on” exercise, the territory of physical therapy (19). And well may we be concerned, for it is *our* professional identity that will be diluted by this infringement, not theirs. Obviously all disciplines that are working with a client should work together cooperatively, but it seems equally obvious that it is uneconomic if there is duplication of function. Exercise has its important place, so also does purposeful activity as a producer of adaptive responses, and this latter is the realm of the occupational therapist. We need to be able to explain in terms of the principles outlined above why purposeful behavior can elicit adaptive responses that exercise alone cannot. Defining our role in this way will be much more satisfactory than

the old way of dividing the patient in the middle and giving the top half to the occupational therapist and the bottom half to the physical therapist.

The *fourth* characteristic of the adaptive response is that it is self-reinforcing. In animal behavior the reward for successful mastery of environmental demand is survival, and the penalty for failure is death. In humans the results are seldom so immediate and stark. Nevertheless, mastery of environmental demand is a powerful reinforcer and Maslow lists the drive to master the surroundings as one of Man's innate needs (20). Mastery of one demand is rewarding and serves as a stimulus for attention to the next necessary response at a higher level of challenge. This is the genius of occupational therapy—that, as the old adage has it, “nothing succeeds like success.” As the occupational therapist plans and structures successful efforts, each success serves as a spur to a greater effort. Exercise, psychotherapy, behavior modification are all means to an end. But with purposeful activity, the activity itself is an end, as well as being a means to a larger end, therapy or adaptation, hence the double motivation mentioned before.

To summarize the thesis thus far, I am implying that the essential purpose of occupational therapy is to stimulate and guide the adaptive processes through which an individual may best survive and develop. I have suggested that the basic characteristics of occupational therapy derive from the corresponding elements of adaptation; *first*, that it is an active response; *second*, that it is evoked by the specific environmental demands of needs, tasks and goals; *third*, that it is most efficiently organized below the level of consciousness, with conscious attention being directed to objects or tasks; and *fourth*, that it is self-reinforcing, with each successful adaptation serving as a stimulus for tackling the next more complex environmental challenge.

Having tried to identify the basic characteristics of the adaptive process from which the significant features of occupational therapy derive, let us look at some familiar aspects or categories of practice in the light of adaptation, and also at the adaptive process as an organizing principle in two newer or less familiar areas of practice.

In broad general terms we can divide individual adaptation, on the one hand, into the phase that is synonymous with developmental learning, and, on the other hand, the process of adjusting to change or stress.

Developmental Learning as an Adaptive Process

The organizing of sensory input into information, and the subsequent integration of an appropriate motor response, is a continuous adaptive process. As mentioned earlier, Leontiev suggests that human functions consist of the interaction of sensory input and individual activity. For example, we learn to see by seeing. The visual figure-ground skills of a child raised in the green leafy lights and shadows of the jungle will be different from those of the child raised in the clear light and great vistas of the Navajo reservation. Each child begins with similar, basic visual equipment, but the process of learning to see in each environment is a process of adaptation in which available stimuli, combined with active sorting and filing, produce patterned vision.

There are a number of theoretical frames for considering the adaptive processes of early childhood, and the occupational therapy profession can be proud of the several outstanding developmental theorists among its ranks. It is not the intention here to recapitulate developmental theories, but to emphasize the fact that "eliciting an adaptive response," in Dr. Ayres' apt phrase, is, in essence, eliciting goal-directed or purposeful behavior. This may be as basic as enticing an infant to lift its head to look at a toy, or more complex, such as suggesting to a child that he shovel sand into a wheelbarrow to trundle across the playground to a sand box. The child's goal is playing with the sand; the therapist's goal is stimulating co-contraction, heavy work patterns, and so forth, in the service of integrating and organizing sensory input and motor behavior.

The role of the occupational therapist in stimulating this sequence of integration and response appears deceptively simple to the consumer who cannot be expected to understand, without explanation, that it takes considerable knowledge and professional finesse to know which adaptive response is needed and to provide the proper setting and stimuli for a given action at the opportune moment when the individual's development makes it possible for him to make a successful response.

We have been considering the well-known field of developmental learning in children. However, it is not only in childhood that one must organize sensory data and respond appropriately. This process goes on throughout life. Afferent, or incoming impulses, particularly those characterized as proprioceptive feedback, play a crucial role in sensory integrative processes in adults as well as in children. The key concept is that sensory input is the raw material for adaptation at *any* age. If developmental adaptation does not take place normally in childhood, the adult will show various disabilities ranging, as an example, from mild motor planning problems to severe disabilities such as process schizophrenia. Recent studies, suggesting that the adult brain is relatively plastic, give some hope that even in adulthood developmental adaptations can be facilitated.

The role of sensory data in the adult has been strikingly illuminated in the last 25 years by a large number of sensory deprivation studies, which have, as a matter of fact, strengthened the theoretical base for sensory integration theory. However, the critical relationship between these studies and the health of the average citizen is just beginning to be appreciated. As an example, consider the scenario for an all too familiar tragedy that goes something like this. An elderly man, in somewhat precarious health, must undergo major surgery. As a precaution, he is kept somewhat longer than usual in the intensive care unit. When he is moved to a room, he is kept very quiet, sedated, curtains drawn, and visitors restricted. Somewhere between the third and fifth day, post-surgery, the nurse's notes show that the patient appears to be confused and disoriented. The following day he is hallucinating and has to be restrained because he is trying to get out of bed. There are no family members who are willing to care for him in his apparently deranged state, so he is transferred to a nursing home where he continues in a state of relative sensory deprivation, and his mental and physical condition deteriorates rapidly.

The tragedy is that this kind of occurrence is often preventable. And in the instances where confusion or disorientation occur in spite of precautions, it is important to note that

it is often reversible if suitable sensory input is provided. Lipowski, whose studies (21) suggest the reversibility of deprivation-caused psychiatric symptoms, also warns that around age 55 vulnerability to the effects of sensory deprivation increases quite sharply. Thus it is apparent that it is not just the very old who are at risk.

It is also important to note that the effects of deprivation are cumulative, and that the more sensory modes that are understimulated, the faster confusion and disorientation result. One of Lipowski's most significant findings appears to be that immobilization is the most disabling form of deprivation, and that, if added to other sensory losses, is very likely to produce psychiatric symptoms in the vulnerable.

In terms of the emphasis of this discussion on adaptation, we may think of confusion and disorientation as *dis*-adaptation—failure of organization and response. Hallucinatory and delusional phenomena, on the other hand, represent *mal*-adaptation; the sensory data is organized, but incorrectly, and therefore, of course, the response seems inappropriate. So-called unpatterned stimuli are as bad or worse than complete absence of stimuli. "White noise," such as the constant hum of a motor, is an auditory example, while the test pattern on a television set is an instance from the visual domain. Kornfeld, Zimberg, and Malm, in a paper on psychiatric complications of open heart surgery (22), report that "The patient might first experience an illusion involving, for example, sounds arising from the air conditioning vent or the reflection of light from the plastic oxygen tent. Many experience a rocking or floating sensation. These phenomena were often not reported to the staff and could then develop into hallucinatory phenomena and associated paranoid ideation." Kornfeld and his group confirm the harmful effects of immobilization, noting that many patients interviewed after recovery remembered as one of their chief discomforts not being able to move. Let us emphasize again that *sensory input is the raw material for adaptation*. Without adequate sensory data, the individual's adaptive capacity is greatly curtailed.

Motivational loss is another aspect of hospital-induced sensory deprivation that is of critical importance in rehabilitation or therapy. Zubek, in a report on electroencephalographic correlates of sensory deprivation (23), reports that not only were alpha frequencies progressively decreased during 14-day deprivation experiments, but this was also accompanied by severe motivational losses. The abnormal encephalograms persisted for a week after the subjects returned to normal living conditions, *but the motivational losses lasted even longer*. These findings have profound implications for all medical personnel who are trying to motivate patients toward independence. Perhaps the cart has been ahead of the horse! Perhaps the first thing to do is to provide sensory stimulation, particularly of the proprioceptors, through whatever degree of mobility is possible. Then motivation for independent behavior might follow more quickly and spontaneously.

I am indebted to Lillian Hoyle Parent for discussing with me some of the material on sensory deprivation, and, as she points out in her recent helpful summary of the deprivation studies (24), occupational therapists are better prepared than any other health care professionals to make use of this information. A dozen exciting research projects come readily to mind in reference to hospital-induced deprivation. For example, a control group receiving

the usual post-operative care could be compared with an experimental group receiving systematic meaningful sensory stimulation under an occupational therapist's supervision. Comparisons could be made of number of hospital days post-surgery, incidence of complications, and amounts of pain and sleep medications.

We have suggested that sensory input and motor output are the essentials of individual adaptation as seen in the familiar field of developmental learning, and we have looked at the less familiar concept of sensory deprivation as a prime factor in *dis*-adaptation or *mal*-adaptation.

Therapeutic Adaptation to Change or Stress

The *second* general category of adaptive response is adaptation to change or stress. One aspect of response to change is represented by a very active current field of specialization in occupational therapy, namely the field of physical disabilities. This field concerns itself with the individual's adaptation to physical change.

Changes within the person can be of many kinds; what they have in common is they demand that the individual alter habitual responses. Arthritis, heart disease, amputations, spinal cord injuries, stroke, blindness are a few examples. The use of adaptive equipment, work simplification, splinting, development of strength and skill in residual body segments are among the adaptive considerations in this area of practice. Sometimes the acquiring of appropriate adaptive responses may actually be a matter of survival, as with the cardiac client. More often adaptation means the possibility of actualizing potential that would otherwise be wasted.

While the concepts of adapting to physical change are very familiar to us as therapists, we have had less direct experience with the relatively new field of adaptation as it relates to stress medicine. The role of activity in adapting to or coping with stress is an old idea whose scientific time has come. Dr. Hans Selye, who is considered the "father" of stress medicine, comments, "The existence of physical and mental strain, the manifold interactions between somatic and psychic reactions, as well as the importance of defensive-adaptive responses, had all been more or less clearly recognized since time immemorial. But stress did not become meaningful to me until I found that it could be dissected by modern research methods and that individual tangible components of the stress response could be identified in chemical and physical terms." (25) Dr. Selye called this stress response the "general adaptation syndrome." Today few literate people are unaware of the fact he demonstrated: that any stimulus which appears to pose a threat to survival elicits a response that includes the secretion of the cortico-steroids which prepare the body for a fight or flight reaction. The heightened blood pressure, pulse, and respiration that follow a danger signal had a distinct survival value when the appropriate reaction was running, or climbing, or hand-to-hand combat. In our present culture, running, climbing, or fighting are seldom considered appropriate responses, and threats are often perceived as long continued, like the danger of losing one's job, or the daily stress of driving through rush-hour traffic. There are well-known stress diseases such as ulcers, high blood pressure, and heart disease, to mention the most common, that follow chronic stimulation of cortico-steroid secretion. The

current vogue for jogging, marathon running, and other strenuous sports owes part of its very real usefulness as a health maintenance measure to the fact that exercise metabolizes and renders harmless the stress hormones that otherwise might accumulate and cause permanent damage to the body.

What is not so often considered is the effect of either subtle or overt stress on an already over-taxed system. A person who is already feeling ill is told he must enter the hospital. Whether it is for surgery or for tests, or for nursing care, everything about the experience spells danger: the strangeness, the uncertainty, the painful or uncomfortable procedures, but most of all the feeling of helplessness. Stress hormones are poured into a system that not only is already reacting to the stress of illness, but also has few opportunities for activity that might help to metabolize and dissipate the cortico-steroids. Stress hormones can make the sick person sicker and can retard recovery.

It is often assumed that *rest* is what is needed in the hospital, but, as Dr. Selye points out, unless the organism is completely exhausted, activity of some sort is much more appropriate to stress dissipation than too much rest. Many years ago an occupational therapist frequently stopped into a hospital room and made available purposeful, goal-directed activities that allowed the patient an adaptive response to stress. If we had known then what we know now, we might have called it *stress management* or *stress reduction therapy*. Instead, someone used the word *diversional*, with the result that the whole area of human needs has been virtually abandoned, and the word *diversional* has become the equivalent of profanity. In fairness we must point out that few third-party reimbursement agents are willing to pay for something labeled *diversional*.

To turn to another aspect of this subject, before the stress hormones and their physiological effects had been identified by Dr. Selye, we often spoke of *tension*, and in the mental health field were able to recognize the usefulness of activity, even though the reasons were vague. Dr. Roy Grinker writes of the treatment of *battle fatigue* or *war neuroses* (26) and says, "In their free time physical activities are encouraged in order to dissipate accumulated tensions. Enforced idleness and rest are bad therapy for these states." Later he comments, "The patients are busy the whole day with physical and mental activities and various aspects of occupational therapy."

The high hopes held for the usefulness of the psychotropic drugs led to the serious curtailment of other forms of treatment such as those described by Grinker. Now that there is widespread disillusionment with the major tranquilizers, which seem to cause almost as many problems as they solve, perhaps the efficacy of what might be called *adaptational therapy* will be rediscovered.

The psychiatric disorders provide excellent examples of the interrelatedness of the various aspects of the adaptive process. In some instances, as in autism or in process schizophrenia, we are probably dealing with inadequate developmental adaptive learning and the attendant severe problems in perception and communication. These problems inevitably produce stress and the concomitant physical changes produced by the stress hormones. These, in turn, probably further derange the sensory-integrative processes. Many of the symptoms seen in the psychoses represent either disadaptations or maladaptive behavior. As

the therapist is able to facilitate adaptive development, that is, sensory integration, coping behaviors improve. Activity also helps to metabolize stress hormones and thus increases the client's feeling of well-being. Though basic biochemical causes may ultimately be found for some of the major psychoses, there will probably always be a need for facilitating adaptive or coping skills in a society that seems increasingly stressful.

Psychologists Gal and Lazarus, it seems to me, have made the strongest case of activity as an adaptive response to stress. Their article, "The Role of Activity in Anticipating and Confronting Stressful Situations" (27), spells out the physiological correlation of activity with the reduction, or metabolism, of the stress hormones. They point out that while activity which is related to the cause of the stress is best, yet activity of any kind is better than none. Their useful analysis of the literature concludes with these words: "Regardless of the interpretation, it seems quite evident that activity during stressful periods play a significant role in regulating emotional states. We are inclined to interpret activity as being a principal factor in coping with stress. As has been repeatedly argued by Lazarus a person may alter his/her psychological and physiological stress reactions in a given situation simply by taking action. In turn this will affect his/her appraisal of the situation, thereby ultimately altering the stress reaction."

To summarize, we may divide adaptation in response to change or stress into three major components of concern to the occupational therapist:

1. adaptation to physical change (which includes a component of adaptation to stress because the physical changes are in themselves stressors);
2. adaptation to the stress of hospitalization or acute illness;
3. adaptation to reduce stress reactions in psychiatric conditions.

We have engaged in a lengthy exploration of stress and adaptation because it seems that in the foreseeable future coping with or adapting to stress is going to be one of the major health challenges facing humanity. Toffler, in his book *Future Shock* (28), makes a good case for the thesis that the extremely rapid rate of change in almost all of our cultural institutions is a significant cause of stress for large segments of humanity, certainly including our own. Ethologist Tinbergen warns, "The amounts of strain now imposed on the individual may well overstretch man's capabilities to adjust." (13) If it is true that stress is a major health problem for modern man, and if, as Gal and Lazarus propose, activity is of major importance in stress adaptation, then occupational therapy has a major role to play in health maintenance and disease prevention as well as in health restoration.

One of my colleagues (Roene Shortsleeve) once drew a cartoon that expressed this rather well. She drew a bearded figure in the white robes of a prophet. In his hand was a placard which read, "The world is NOT coming to an end; therefore, you had better come to occupational therapy and learn to cope."

Conclusion

I have attempted to demonstrate in this paper that the adaptive process can provide a theoretical framework for occupational therapy that meets the criteria suggested at the outset: that it can be applied to all the specialty areas as a unifying concept; that it will differentiate

occupational therapy from other professions; that it is readily explainable to other professionals and to consumers; and that it is adequate in depth to allow for scientific elaboration and refinement.

The adaptive process is probably not the only tenable model for occupational therapy. If this paper spurs others to articulate a more suitable theory, it will have served its purpose.

Toffler, in concluding *Future Shock*, comments that, as yet, there is no science of adaptation. Is it too ambitious to suggest that occupational therapists are uniquely prepared to begin constructing *a science of adaptive responses*? It is a challenge worthy of our best.

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