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By Herbert J. Greenwald

New Psychological Factors In Stress and Heart Disease

A well-known physician under stress was finally persuaded -- pressured -- by his very concerned wife to take a vacation. The first day on that beautiful Caribbean beach he suffered a massive heart attack and died.

Was this man's heart attack purely an accident? We'll never know, of course, but a new understanding of psychology suggests that he might have lived longer had he not gone on that vacation. The possibility that a vacation might be harmful conflicts with our common sense that time off from stress is always good. The reason for this noncommon sense viewpoint will become clear shortly.

To provide an explanation of why attempted relaxation may have been harmful in this case requires a brief understanding of a new theory of psychology.

As a way to begin, consider the following unexpected but true circumstances:

- A young plumber suddenly experiences an extremely painful spot on his chest, the size of an egg. The man is in vibrant health and there is no apparent medical reason for it.
- A foreman has blinding headaches that disable him for days at a time. No treatment touches the headaches -- not surgery, powerful drugs, a change in diet, vacations, chiropractic efforts, etc., including removal of all his teeth. No medical or other explanation of the headaches has been found despite forty years of treatment by many professionals.
- A conscientious worker continually develops excellent ideas to help the company for which she works. She is shocked to hear from her boss that she is in danger of being fired.
- A man who has "everything" -- good looks, intelligence, and self assurance; an attractive, devoted wife and fine children, respect and fulfillment in his occupation; and a secure income beyond a fifth of a million dollars a year with many

luxuries, including a yacht. It doesn't make sense to him that he has an alcohol problem and high blood pressure.

I have seen many such "noncommon sense" cases like this as Clinical Director of the Adult and Youth Stress Clinic in Sharon. However, such situations become understandable and successfully treated once you know what to look for. After the following demonstration to set the stage for understanding the new approach we will return to explain these cases.

I imagine that you are looking at a window which is turned so that one end is further away from you than the other. Of course, the further end appears smaller, making the window appear wedge shaped. Suppose a window was actually built in this wedge shape and suppose further that a motor was turning this wedge shaped-window around and around (see illustration in Figure 1).

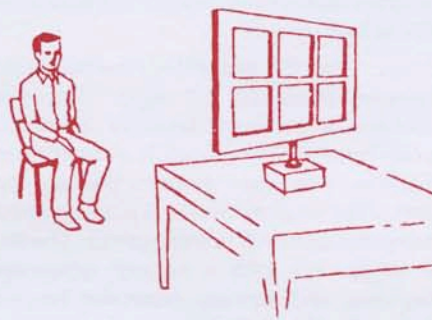


Figure 1: The wedge-shaped window used in the oscillating window illusion.

If you were standing at some distance from this rotating window what would you see? It may surprise you that you would probably not see the window turning in one direction as it is, say clockwise around its axis. Instead, you are likely to see it rotate first in one direction then in another direction. This illusion is so strong that you will continue to see the window oscillating back and forth even though you know that it is going in only one direction.

Why? It is because distant things appear smaller. When the window rotates, your mind recognizes it as a normal rectangular window with the small end turned away from you. Consequently, your mind rejects the possibility that the small end could be closer to you than the larger end. Because the window is moving, the small end is interpreted as rotating away from you. However, when the larger end comes toward you, your mind reverses the interpretation and accepts the original direction in which the window was moving. The result is an illusion that the larger end is always moving toward you and the smaller end is always moving away.

Is this illusion due to some shortcoming in your visual ability? No. You can see the window very clearly. Rather, illusions like this involve a conflict between belief and reality, in this case a *belief* of yours about distance perception.

Is this belief something you were born with? No. It turns out that rural populations in "underdeveloped" countries see the wedge-shaped window revolving just as it is, in one direction. This is because they tend not to experience rectangular objects in this environment: there are irregular huts, rolling hills, bent trees, etc. Westerners, on the other hand, have many straight lines in their environment -- windows, doors, walls, buildings, etc. Thus, we know from experiments with nonwesterners that you and I acquired this belief about wedge-shaped windows.

Are you aware that this belief of yours is creating the illusion? No, because it takes the above explanation to make it understandable. This means that your belief is operating below the level of your awareness. Indeed, this illusion demonstrates that there is a subconscious (if you needed any demonstration of it).

Are you able to consciously control this belief? No, because even when you concentrated on trying to see the window turn in one direction you still weren't able to do so. This demonstrates that even beliefs

which can distort reality may resist conscious control and logic. (Were you aware of this capacity of yours for "irrationality")? There are implications here for understanding situations in normal human behavior, such as difficulties in learning and interpersonal relations, as well as abnormal behavior. It also indicates how important beliefs are when we seek ways to improve the human condition.

When did you acquire such a strong belief? Quite likely very early in childhood. It was encoded in your brain -- in your cerebral cortex -- powerfully, without your being aware of it, and quite possibly without the aid of language. Information in the cerebral cortex is termed "cognitive." Hence, it is apparent that something cognitive need not require language nor imply something weak or trivial. Indeed, cognitions of many sorts, including expectations, attitudes, goals and philosophies, as well as beliefs, powerfully affect behavior and should not be underestimated. It is one reason why psychotherapy sometimes takes so long.



We are now in a position to suggest some possible explanations for the noncommon sense cases that opened this article. For example, the physician who died of a heart attack on the beach fits a psychological profile of people in my research who have heart disease. This profile centers around cognitions, including beliefs that task achievement is necessary for success, that success brings everything, that one either totally succeeds or totally fails, and that failure is devastating. Other cognitions in this "cardiopsychological" profile include uncompromising criteria, rigid standards, and a strong drive to be responsible.

Although such aspects are regarded favorably in our culture, my research suggests that they can produce great strain. This strain occurs when psychological drives and other cognitions are frustrated. It appears that when a person is under strain potent biochemicals are released, such as adrenalin, cholesterol, and other substances. The damage from such substances tends to be heightened in some areas, including the place where blood vessels branch. Among other things, this results in a gradual narrowing of the branches of the coronary artery (the artery that feeds the heart muscle). A subsequent spasm or clot, or the advancing arteriosclerosis itself, can shut the blood supply to the heart muscle. The result is cardiac arrest -- a heart attack.

If the above physician had hardening of the coronary artery, as seems possible, a spasm due to additional strain could have

come from his believing that the vacation was interfering with his felt responsibilities to his patients, colleagues, writing, and research.

So although his wife was quite likely correct that stress was killing him, a more appropriate therapy would appear to have been helping him to modify his cardiopsychological cognitions (and also, perhaps improving his diet, exercise, and other aspects affecting his health). Unfortunately, however, many people, including physicians, sometimes fail to see the connection between psychology and biology and frequently put off making healthful changes in their lives.

As to cognitions, there are many types to consider. In addition to those mentioned above -- attitudes, beliefs, goals, expectations, and philosophies -- there are also personal rules and limits, commitments, values, standards, concerns, preferences, desires, needs, wants, demands, and likes, among other things. There are also noncognitive aspects, such as psychological drives. Since such factors guide behavior I refer to them as "biopsychological guiding factors."

"Biopsychological" applies since the factors are not only encoded biologically, they have powerful biological effects. Consider the case of the plumber mentioned at the beginning of the article. This fellow had been suffering under strain from an authoritarian boss. At home the tension worsened because both his wife and his parents saw only the boss' side of it.

Shortly after he became a Clinic patient, he phoned me at home. He had just had a fight with his wife, he said, and a large, painful egg-shaped knot had suddenly popped out on his chest. He wanted to go to the hospital emergency room but decided to try to calm down before attempting it.

This man's guiding factor analysis suggested specific reasons for the fight and his tensions. I began to work with those guiding factors over the telephone. About forty minutes into the conversation he noticed that the painful area on his chest was disappearing.

Astounded at this remarkable occurrence, he went next door to tell his neighbor. As he discussed his problems the painful knot on his chest came out again! Then, remembering what he had discussed over the phone, he talked himself down from the tension . . . and the egg-shaped knot disappeared once more.

This connection between guiding factors and biological reactions is even more direct than one might imagine. Take the following situation. Imagine you are accountable for a job you share with another person. Now suppose that a person comes to work an hour late, leaves an hour and a half early,

takes an extra hour for lunch, and commits many errors. You try to catch the errors and so you now work twice as hard as you ordinarily would . . . How do you feel emotionally?



Quite possibly you would feel frustrated, taken advantage of, and angry. Suppose you now complain to your supervisor who then says to you: "I wasn't going to tell you this but that person has only one child. That child is slowly dying of cancer." . . . How does this make you feel?

Might you now experience some compassion, concern, caring, or even guilt (possibly mixed with the earlier anger)? Notice how quickly your emotions changed, that they went from one extreme (anger) to another (compassion and caring), and that this was due to only a few words.

If words are purely cognitive why should they affect your emotions? It is because support or violation of guiding factors can arouse strong emotions. As you saw, your anger was aroused when your *beliefs* about responsibility were violated and you *believed* yourself taken advantage of. But subsequently, other guiding factors of yours were aroused, those that are connected with your *beliefs* about being compassionate and caring. As this shows, it is possible to understand emotional reactions in terms of the guiding factors that theoretically precede them.

Are guiding factors haphazardly present in your mind? My work supports the hypothesis that guiding factors have a definite pattern, a hierarchical arrangement which, in some ways, resembles the structure of a typical business organization. In such organizations there may be a person at the top, vice presidents, division heads, etc., on down to the lowest ranking member of the organization. Persons lower in the organizational pyramid are expected to follow the directives of those above them in order for the system to run smoothly.

Similarly, guiding factors at the top of a guiding factor pyramid influence those lower in the pyramid. Because such higher order guiding factors theoretically are at the core of a person's personality they are termed core guiding factors. By contrast, guiding factors at the bottom of a guiding factor hierarchy are highly specific and their effects are sometimes noticeable on the surface -- "the tip of the iceberg," in Freud's terms. For this reason, they are called surface guiding factors. There are likely to be many other guiding factors intervening between these two levels and they are labelled intermediate guiding factors.

Some guiding factors are inherited (e.g., drive for stability) and then possibly

modified by experience, while others are acquired entirely through experience (e.g., belief that one's total success comes only from task effectiveness.) A person's behavior theoretically results from many guiding factors -- and often a number of guiding factor pyramids -- acting in combination. Consequently, even a simple behavior may be complexly determined and rooted in a wide network of guiding factors. This is schematically represented in Figure 2.

According to the theory, your guiding factors operate somewhat like a self-functioning computer without you necessarily being aware of what is going on. They contribute to making you special, lend consistency to your behavior, and help determine what you find acceptable and unacceptable in life. Each individual's pattern is unique, even the guiding factor patterns possessed by identical twins reared together.

To see what an actual person's guiding factor structure might look like take the man with blinding headaches mentioned earlier. In reading this "map," which is in Figure 3, you may find it helpful to proceed from the top down since everything at the bottom theoretically must be consistent with the guiding factors which are at the top ("the flow-down principle").

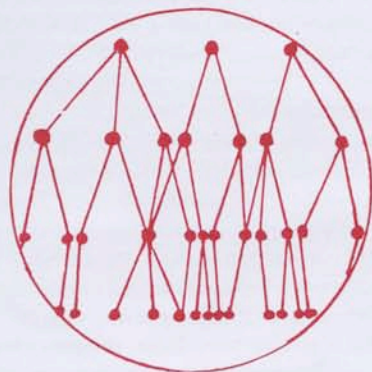


Figure 2:

A schematic representation of guiding factors pyramids linked with one another

This gentleman's guiding factor map reveals many hidden, psychological causes of strain. Unfortunately, neither he nor the many professionals who treated him for forty years were aware of these, just as people are not aware of why they see the oscillating-window illusion. As you can see in this man's map, when things weren't going well or began to pile up he couldn't tolerate it: his guiding factors of uncompromising high standards and strong sense of responsibility were violated. And, if his ideas were interfered with or if he wasn't sure that he would be occupied constructively at home, it bothered him severely partly because of his strong drive to be active. Still another guiding factor -- his

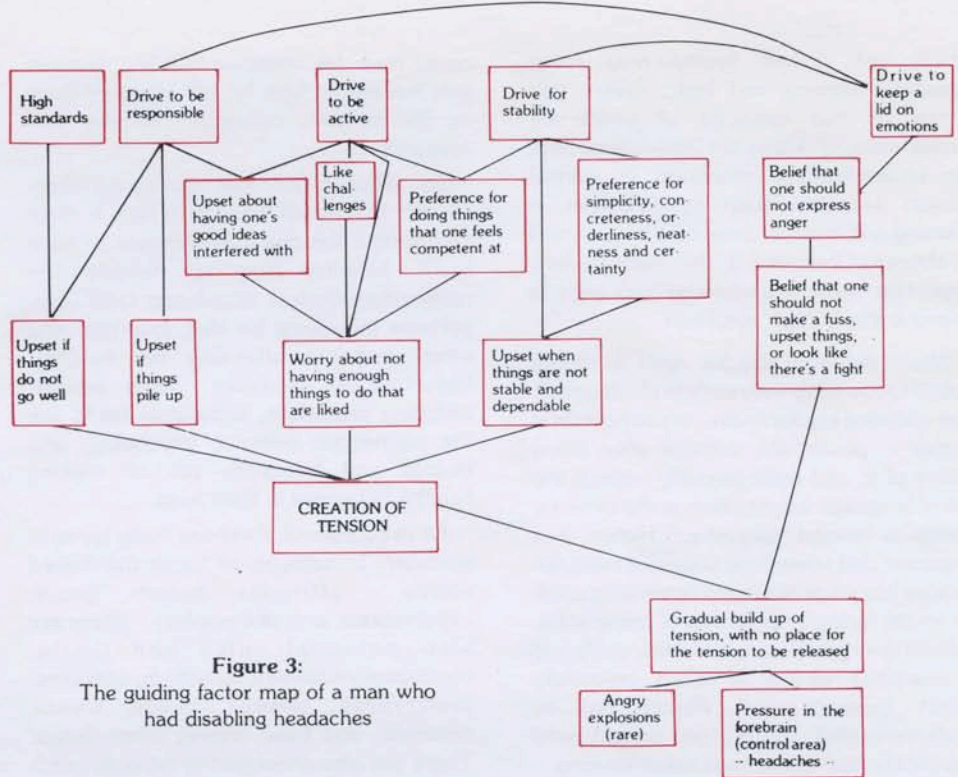


Figure 3:

The guiding factor map of a man who had disabling headaches

strong drive for stability -- was violated when things weren't simple, concrete, under control, or dependable.

The key to understanding his headaches was that such tensions built up massively inside him because they had no place to go, owing to his drive to keep a lid on his emotions. Given these guiding factors it now makes sense why those impossible headaches did not yield to a purely medical approach, such as surgical removal of all his teeth.

A simplified guiding factor map of the sort shown here is typically condensed from a much larger map that extends over several pages. The map is usually constructed within a few sessions after someone becomes a patient. It is shared with the person and provides that person with a deep understanding of himself/herself. Most importantly, it points toward a specific treatment. Patients can understand clearly what is involved and make therapeutic choices.

The treatment is based on the assumption that core guiding factors are fundamental to the person and that any change must support those core guiding factors. Resistance is bypassed by showing the person, in a kind and caring way, how certain changes will satisfy his/her core guiding factors. Two strategies are especially valuable: providing the person with constructive alternatives that satisfy his/her core guiding factors, and helping the person soften the absolute hold that the guiding factors have on him/her. Counselors require a special orientation and training in order to accomplish this.

The guiding factors that are examined are likely to include those of significant people in the patient's life, in addition to those of the patient. To take a concrete illustration, the woman mentioned at the beginning of this article who conscientiously produced innovations to help her firm didn't realize that new ideas violated her boss' strong drive for stability. To change her boss around all she had to do was show how her ideas supported his guiding factors, such as by helping maintain the company's stability. When she did this her job was no longer in jeopardy.

A major objective of this was to help the woman understand how to work with guiding factors. She began to learn how to identify and support other people's guiding factors while at the same time satisfying her own guiding factors. Since higher-level guiding factors can be satisfied in many ways she learned how to find compatible solutions to interpersonal conflicts. In turn, her stomach problems and other tensions diminished correspondingly. Similar training in personal adjustment, self-confidence, and persuasion, as well as in conflict resolution, has helped people with difficulties ranging from depression to skin problems.

Take the case of the man with "everything" who, nevertheless, had an alcohol problem and high blood pressure. After experiences with other treatments for alcoholism which hadn't worked he was pleased to find that this therapy did not require him to admit that he was an alcoholic and guilty of bad behavior, nor that he give up drinking before a specific

treatment was introduced. Instead, the first step was to seek guiding factors of his which might be contributing to his drinking and high blood pressure.

He turned out to have many cardiopsychological guiding factors. For example, he had uncompromising standards, which meant that he faced total failure if he didn't completely succeed. Another cause of strain was his overwhelming sense of responsibility which, although it may sound good, led to his being swamped with extra work, self-imposed deadlines, and worry about avoiding guilt. His belief that failure was terrible created much strain for him, especially since people in his high-powered business organization were harsh when he was less than perfect, even about things for which he volunteered. Still other cardiopsychological guiding factors that were doing him in were very strong drives to be effective, to get things completed quickly, to keep things orderly, and to always be constructively occupied.

Now it was understandable why a marvelous person who appeared to have everything going for him could, nonetheless, be so troubled and, at the same time, not be aware of the strain he was under. It was because his drive to keep a lid on his emotions blocked him from noticing that anything was wrong. This was also the reason he didn't realize that his using alcohol was an attempt to cope with strain -- strain he didn't even know he had. And his rejection of other therapies was because they required him to stop drinking before introducing any treatment. This meant that he would have been without a sure alternative to replace the alcohol.

In drawing up a systematic treatment plan, as is done with all patients, the first step in his case was to help make him aware of the connection between strain and heart disease, taking care to build his confidence that such strain was preventable. He was then taught how to reduce stress by satisfying his higher-level guiding factors in other ways. This included learning such things as dividing obstacles into manageable parts, avoiding feelings of total failure, and dealing constructively with emotions, so as not to be crushed by external pressures.

He was surprised to find, contrary to popular belief, that reducing stress improved effectiveness. After a few extended sessions his stress level dropped and his blood pressure normalized. And, because he no longer needed to drink, he gave up alcohol.

I am often asked to compare guiding factor therapy with other therapies. Each therapy has something special to say in regard to both analysis and treatment. For

example, in the analysis phase a Freudian therapist might seek the cause of the problem in sexual implications of the patient's early childhood situation, and also carefully examine the person's methods of coping, conscience, and biological drives. Various other therapies might seek elsewhere for causes, ranging from "irrational" beliefs to interpersonal interactions, from genetic inheritance to conditioned responses, from nutrition to the family, from allergies to society.

Guiding factor theory finds all such aspects important since any of them can affect guiding factors. Guiding factor theory also recognizes that the same experience can lead to quite different guiding factors. For example, what would the effect be of having a highly critical father when growing up? One possibility is that the person could develop a goal to resist authority figures. However, another possibility is the *opposite*, that he would develop a desire to be subservient to authority figures. But then, again, he also could have developed some *combination* of both of these, or yet again, something quite *different* (perhaps a drive for overwhelming challenges).

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Stress is a stimulus that can have either a positive or negative effect, whereas strain is a result of stress -- a negative result.

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This illustrates why guiding factor theory does not regard knowing a person's background as sufficient. Instead, a guiding factor analysis attempts to pin down the precise significance of every important background aspect (attitude, expectation, etc.). In doing so, the causes of behaviors are examined -- the guiding factors -- not just the behaviors themselves. Thus, a guiding factor analysis goes well beyond where traditional psychological analyses tend to leave off.

The analysis doesn't stop there. It goes on to chart the relative potency of the specific attitudes, drives, beliefs, etc. -- the hierarchical guiding factor map spoken of earlier. The map is needed because the deep and extensive understanding that results not only permits the treatment plan to be focused and systematic, but guiding factor treatment hinges greatly on addressing the patient's most powerful guiding factors.

It might seem that doing a guiding factor analysis would take a great deal of time. However, special techniques speed the analysis so that an excellent initial picture of the patient's guiding factor structure can be

obtained after a few extended sessions with the therapist. This cuts short the months and years of analysis required by some therapies. Since guiding factors soon emerge, it frequently happens that patients can be helped with the first session, something that is gratifying to both the therapist and the patient.

There are also significant differences in the treatment between guiding factor therapy and other therapies. To illustrate, consider a patient who bottles up anger and who, partly as a result, experiences frustration and high blood pressure. Therapies differ in the way they would seek to alter this person's counterproductive bottling up of anger. They might use logic or an argumentative confrontation; pressure from the therapist or a peer group; reconditioning with a series of rewarded experiences or a nondirective style in which the patient comes to his/her own solutions, etc.

Since most therapies try to change a person's behavior directly, the change may be discomforting to the patient and therefore resisted. The change may therefore take considerable time to accomplish. Guiding factor therapy sees change differently. From a guiding factor standpoint, a patient's resistance is due to a violation of the person's guiding factors. For example, a person who bottles his anger may be doing so because he believes that releasing the anger would create an unstable condition that disturbs his drive for stability. So, instead of trying to directly unbundle the patient's anger, the therapist would show how stability would be aided by having more information, such as when hidden feelings are known, and also how feelings can be expressed without instability.

After the patient is receptive he would be trained in specifics, such as learning how to "sandwich" his negative feelings between two positive messages; however to adopt a problem solving, compatible approach; how to avoid feeling guilty about anger; how to avoid attacking the other person; how to prevent the occurrence of much anger, and so forth. As the patient finds such skills working for him he no longer needs to control his anger forcibly and is then able to make the desired change relatively easily.

It may be apparent that this bypasses the patient's resistance. The reason is that when the recommended change is connected with the patient's higher order guiding factors the person readily makes the change himself. This is because the change is dictated by his higher-order guiding factors: it is "the flow down principle" in action -- that everything lower in the hierarchy must be consistent with higher order guiding factors.

This explains why the map is so important. The map charts the higher-order guiding factors and thereby indicates the paths needed for an "end run" around the patient's resistance. When resistance occurs it is a signal that additional guiding factors need to be uncovered and dealt with in this manner. It makes change surprisingly easy and explains why guiding factor therapy, unlike other therapies, assumes that change doesn't have to be painful, also, why the therapist doesn't try to overcome resistance by pressure and why the length of treatment tends to be relatively short.

It is probably also apparent that the therapist's recommendations are designed to accomplish several things simultaneously. Typically, this includes attempting to satisfy the guiding factors of other people as well as the patient, while helping the patient let go of counterproductive thoughts and behaviors. For example, in the above case the patient would learn techniques that would satisfy other people's needs for stability, satisfy his own need for stability, and at the same time, soften the clamp on his feelings.

Another feature of guiding factor therapy is that it does not assume only the patient must change. Unlike many therapies, the situation is also looked upon as capable of changing and so are other people. Patients therefore learn how to understand and communicate more effectively with others. This opens up additional ways for the patient to obtain relief.

There are four phases in the treatment. In the first phase the patient's receptivity to change is enhanced. This is done by building the patient's confidence and flexibility, showing that change can be comfortable, and being supportive. Since people find it easier to accept something pleasurable than something uncomfortable, the positive therapeutic climate continues throughout the therapy. This is important for still another reason: it avoids additional strain for patients who are already under stress, such as people with high blood pressure and heart disease.

In the second phase, the patient's difficulties are specifically dealt with as described. The patients are co-participants in the problem solving and nothing is done without the patient's approval and knowledge (except in the case of those who are not able to benefit from this).

In the third phase, the patient solidifies the new skills. He/she learns the principles behind the techniques and how to apply the principles in new ways and other situations. This is done with much support and encouragement from the therapist and the patient further loosens the automatic grip that his guiding factors have on him/her.

In the fourth phase the therapist's role tapers off. The patient becomes his/her own problem solver and dependence on the therapist is gradually reduced.

Apart from these aspects, guiding factors have other important features. For example, they can be tested rigorously. Taking advantage of this, hypotheses about guiding factors pass many tests before being employed in a treatment plan. These tests include predicting things the counselor does not know about the person, generating relevant responses in the patient when focused upon, and being measurable, among other things. This ability of guiding factors to be measured effectively permits guiding factor theory to be tested scientifically. This includes controlled laboratory experiments as well as field studies and is what enabled the research on heart disease to be done.

Some guiding factors are inherited . . . and possibly modified by experience.

An implication of the heart disease research, incidentally, is that there is a difference between stress and strain. Stress is a *stimulus* that can have either a positive or negative effect, whereas strain is a *result* of stress -- a negative result. For example, some people respond unfavorably to a stimulus that pleases others, such as that fatal vacation for the physician at the beach. Since much depends on a person's guiding factors, knowledge of guiding factors is a very practical tool to help explain instances that do not square with common sense, such as those mentioned in this article.

Guiding factor theory also helps explain some puzzling aspects about a type of personality some researchers believe is associated with heart disease. This is the Type A personality -- a person who constantly strives for deadlines, tries to do many things at the same time and accomplish them quickly, speaks forcefully, is impatient and aggressive, and has little time for personal relaxation and pleasure. The puzzling thing is that a great many Type A's do not have heart disease and many Type B's (the opposite of Type A) do have heart disease.

Guiding factor theory's explanation is that some Type A behavior is due to guiding factors unrelated to heart disease. Also, some Type B's have cardiopsychological guiding factors, which are not necessarily apparent on the surface. With some training in guiding factors it is possible to recognize which Type A's and Type B's are at risk of heart disease.

Another puzzling question is why many Type A's do not slow down, even when advised to do so by their physician. From the standpoint of guiding factor theory this is because it is difficult for people to do things that conflict with their guiding factors. This leads to the surprising conclusion that it may be harmful for hard driving individuals to slow down -- because that would be a surface change which opposes their basic guiding factors (recall, again, that physician at the beach). The solution, according to guiding factor theory, would be to modify the underlying cardiopsychological guiding factors.

Similarly, relaxation, biofeedback, and behavior modification, which can help relieve symptoms of strain, are unlikely to modify the guiding factors that produce strain in the first place. Another implication of the theory is that attempts to reduce the risk of heart disease by giving up smoking, attending to good nutrition, losing weight, and exercising regularly, etc., can be more easily accomplished when the underlying guiding factors are addressed appropriately.

The guiding factor approach described here has only begun to be applied. As new information emerges it will not only aid patients and advance knowledge, but it will also lead to programs that can help prevent strain and heart disease. Through the use of guiding factor therapy with a number of patients I feel that it is possible to state that psychological tensions and stress-related illnesses can be reduced.



Robert Ward

Dr. Greenwald has five degrees, including a Ph.D. in experimental social psychology from Columbia University. He is professor of psychology at Bridgewater and clinical director of the Adult and Youth Stress Clinic in Sharon. His theory of biopsychological guiding factors, described in this article, gradually came together during years of research in attitude formation and change. In addition to its application to stress and psychotherapy, the theory has important implications for conflict resolution, persuasion, personal adjustment, teaching, learning, and problem solving. Dr. Greenwald's thinking has been greatly influenced by the work of Kurt Lewin, Jean Piaget, William McGuire, Leon Festinger, and Jack Brehm.