Chapter: Motivations

Motivations

WHAT'S THE ANSWER?

"My friend and I went to a party the other night. It was really nice -- candle light everywhere and a good time was had by all. And -- wow! -- what a spread! They even had lobster. I didn't eat too much more than I usually do. But my friend who's staying with me ate like a horse. I don't think she left the area where the food was all night." *Which of these two people probably has better control of her eating habits? Why do you think so?*

"No, Carlita, no. I can't accept the scholarship."
"But, Pam, you earned that scholarship. Your test performance was the best of any senior in the city!"
"I know, Carlita, I know. But Jim didn't get one. I just can't accept mine -- it would crush him!" *What motives are operating*

here? Why is this female refusing the scholarship that was not won by some male she knows?

Motivation influences many aspects of our life and helps explain different causes of behavior. It aids survival, accounts for variations in any individual's behavior, and guides our actions. Motivation operates in a cycle. Homeostasis involves maintaining various bodily processes within a narrow range of acceptability. Deviations from that norm lead to automatic corrective actions.

Human motives range from physiological motives (hunger and thirst) through "mixed" motives, which involve both physiological and learned aspects (pain and sex), to purely learned motives (achievement and fear). Our body reacts as it becomes motivated. For each of us our specific pattern of physiological arousal is the same for each motive. Visible parts of the body, such as our eyes, are also thought to react when we experience stress.

Our body's needs for growth, repair, and storage of resources combine with our prior experiences and many other environmental stimuli to make us hungry. A number of physiological and environmental factors determine when we will start eating. Our hypothalamus is now thought to set our body weight. Two factors combine to cause us to stop eating. Our brain monitors how much we take in, and our stomach registers the amount of food being stored. In the longer run we are kept from eating as unknown body factors restore themselves. Thirst is similar in some ways. The hypothalamus causes us to drink, and the same mixture of factors that stops our eating also stops our drinking. An aspect of hunger which differs from thirst is our ability (or inability) to maintain a healthy weight.

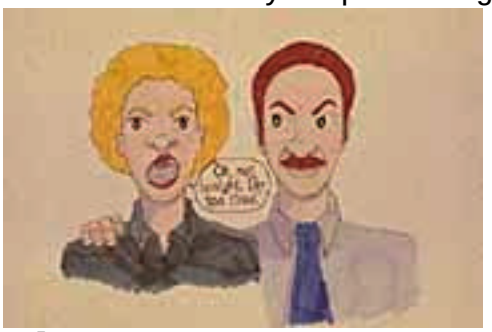
Mixed motives involve physiological components and the influence of learning that has often occurred during critical periods in early life. Pain is one such motive. Experience with pain in the early years is important in learning how to react to pain. Sex is another mixed motive. Its physiological aspect has some similarities with hunger and thirst, but otherwise it differs in many ways. Hormones also influence sexual behavior, but human sexuality tends to be dominated by environmental (learned) cues. The moral decisions concerning sex are extremely complex in today's world.

Whereas physiological motives push us toward a goal, in psychological, or learned, motives the attractiveness of the goal pulls us toward it. Responding to learned goals requires the availability of a response, an expectancy of success, a goal worth pursuing, and an environment in which to do so. A variety of tests have been developed with which to measure learned

motives. Achievement is one such motive. One study, now questioned, shows fear of success as mainly a problem for women. Fear is another learned motive and can be demonstrated in animals. If we can control our environment, fear subsides; if we can't, it leads to helplessness and depression. Abraham Maslow has proposed a theory of five major needs, arranged in a sequence in which they arise and can or must be satisfied, the highest being self-actualization.

What Is Motivation?

In the Learning and Language topic we discuss learning and memory, processes which clearly influence our behavior. We also do many things seemingly "instinctively," but actually because of highly learned responses called habits. However, in this and the Emotions topic we'll be looking at another major influence that is also always operating in our daily lives -- motivation.



Motivation will be described here as an intervening variable (see the Psychology: Its Nature and Nurture Chapter). Motivation does two things. First, it activates behavior, or provides the energy for it. Second, it directs the activated behavior toward a goal. To be true to our earlier definition of intervening variables, we'll need to find out what independent variables cause motivation to occur. And we'll need to see how our behavior (the dependent variable) changes when our motivation increases or decreases.

It is obvious that there are many different causes of human behavior. We've already looked at two: inherited mechanisms and learned responses. Yet even with inheritance and learning held constant, we still see differences in behavior. For instance, some Saturdays you go to a movie, other Saturdays you'd rather go to a dance. Some days you eat a sandwich in the afternoon and some days you do not. So your own behavior varies from time to time. In addition, your behavior differs from that of your friends, and also from that of your family. Motivation helps us to explain these variations in behavior both within individuals and among different people in the same situation.

There are also a number of behaviors whose motivations help us survive, both individually and as a species. We seek food, and we try to avoid pain -- to survive as individuals. We procreate -- to survive as a species. As we'll see, motivation

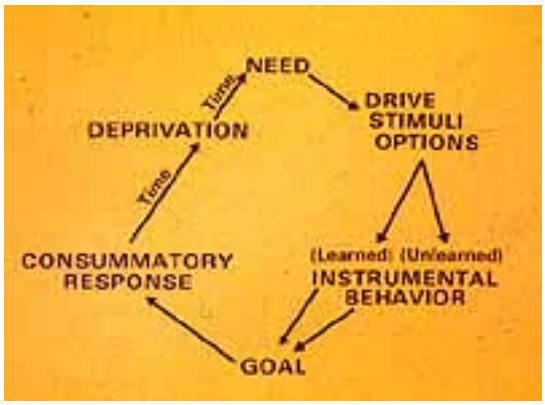
involves a very complex combination of internal stimuli -- aches, pains, and urges -- as well as many external cues.

Lastly, when we talk about behavior being energized or started, we're really talking about guiding behavior. Think a moment. When you're out on a date, you're trying to read a very vague set of signals, some of which we were discussing in the Language topics. Yet, those very weak stimuli may (if you can detect them) unleash very strong responses. If someone whose attention you have been seeking for weeks touches your arm or looks at you longer than circumstances require, it may stimulate weeks of additional effort on your part! In fact, the vigor of your response may be used as a measure of the strength of your motivation. But, what if you encounter aversive stimuli? Then you are likely to stop doing something. So a fourth category of reasons why we need the concept of motivation includes the idea of efficiency: we can use weak stimuli to guide strong behaviors. And, we can respond to other stimuli and stop behaviors that might cause us injury.

Not all psychologists agree on the importance of motivation. For example, those who emphasize operant conditioning really are not concerned with internal processes -- which motivation clearly is. Operant conditioners explain "motivated" behavior just on the basis of rewards.

There are three important elements in all motivated behavior. The first element is the events that cause a need for the behavior to occur. These events may be inherited, learned, or a combination of both. The second important element is the internal result. This may be a drive or urge, a purpose, or a motive. These words are often used in place of one another -- sometimes correctly, sometimes in error.

A goal is the third important factor. This may sometimes be called an incentive. All three of these elements -- a need, an internal result, and a goal -- are combined in motivated behavior.



Going in Cycles

The operation of the three elements of motivated behavior -- needs, drives, and goals -- is often said to be circular or repetitive.

They operate in a cycle, such as we've shown in the diagram. Right now as you're reading, how hungry are you?

reading, how hungry are you? Your answer will place your current level of motivation with regard to hunger at some point in the cycle. We can jump in anywhere to describe the cycle to you, because the sequence of events is constant -- they always occur in exactly the same order. Assuming you are hungry, let's use your current need to show you what's involved.

A need is an internal state that motivates our behavior. In our example, it's called hunger. Such needs may be physiological -- such as hunger or thirst -- but their place in the cycle may also be occupied by learned needs, as we'll see a bit later. A drive is an aroused state of an organism. Drives are aroused by depriving an organism of the goal object or incentive it needs to satisfy itself. Each need will create specific kinds of drives within us and also give us various cues as to its existence. For example, how do you know when you're hungry? Does your stomach growl? Do you get nervous? Shaky? Do you get a headache? Regardless of the cues to which you respond, you feel hungry. If you're thirsty, you experience a different set of cues. These cues guide your responses.

Any motivated response will be directed toward a particular goal object. However, the specific response you make may be learned or it may be inherited. We humans don't have many inherited responses that we don't control. In fact, one of the few motivated behaviors that causes a rather uncontrolled response is pain. Pain will cause you to withdraw.

Almost all other motivated responses are learned. In our example, we asked you how hungry you were. If you finally decided you were hungry enough to stop reading this book and go search for food, then you were engaging in learned behavior. And you had a number of options. You could go to your kitchen refrigerator and get something to eat. You might journey to the nearest food machine or to a nearby restaurant. All of these would be learned responses motivated and guided by your hunger. The instrumental behaviors you use to get to food are learned; the saliva that flows when you get that food is largely unlearned.

If your responses were successful, you eventually reached the goal object (food) you were seeking. Actually there were two different kinds of goals you might have sought, depending on your needs. Positive goals are those for which you strive, such as food or water. Negative goals are those that you try to

avoid or escape, such as pain. The actual goal is always directly related to the need and drive that are operating.

Your reaction to the goal is more complex, but it involves a consummatory response or some other interaction with the goal. If you were hungry, having reached the food, you'll now start eating it. If you were thirsty, once you reach water you'll drink it. Yet, if you began to experience pain, you would do something quite different. So, the response or reaction you emit at the goal depends on the nature of the goal itself. Is the cycle now complete? Not yet. Remember, we said the cycle is continuous. Read on.

As soon as you finish consuming, avoiding, or escaping from the goal object, you start into the phase of the cycle called deprivation. Once you've eaten a certain amount you stop; time goes by, and you go on to other things. Between lunch and supper (if you don't have a snack) you may go for six or eight hours without food. In short, you are depriving yourself. The passage of time causes an increase in deprivation. However, what happens during this deprivation interval can affect the deprivation. For instance, if you are very active or in a very cold climate, you will get hungrier than if you are quiet, or in a warmer environment. In any event, with the passage of time, you become more and more deprived. And the result? Your needs grow again -- you grow hungry. More drive, more responses, and so forth. The cycle goes on and on.

Homeostasis

Homeostasis is a very important concept. What happens when you get hot? You perspire. The air around you then causes the perspiration to evaporate, and the physics principles involved in that process explain why you feel slightly cooler. You can easily prove this yourself by simply wetting your finger and then waving it in the air. If you move it fast, it will feel cooler than if you simply hold it still.

And what if you feel cold? Obviously, you get goose-bumps. These are actually caused by muscle cells, each attached to the hairs on the surface of your body. When you feel cool, these muscle cells contract, causing the hairs causing the hairs on your body to stand erect. If you pick up a dog or a cat outside on a cold day, a similar reaction causes the animal's fir to fluff which traps air. The air, heated by the body, provides an extra insulating layer to keep the animal warmer. This hair-raising experience takes energy, and to respond to this demand, your sympathetic nervous system diverts blood to the surface of your body to supply these cells. In the process of "burning" the sugar brought by the blood, the underlying muscles warm the surface of the skin.

All of this is by way of illustrating that these two responses -- perspiration and goose-bumps -- occur automatically. If your body temperature moves too far from the correct temperature, sensors detect the drift and cause corrective processes to occur unconsciously. This sensing and monitoring, including all of the processes that may be called into action to correct any deviation from a desired norm, is called homeostasis.

There are many examples of homeostatic mechanisms within us. Automatically controlled in this way are our temperature, the amount of sugar and various salts in our blood, and the ratio of oxygen to waste products which our blood contains. We see homeostasis operate a number of times in the processes discussed in this chapter.

Physiological Motives

This is one of the places where we can apply knowledge gained from our discussion of the nervous system in the Physiological Processes section. Physiological motives involve actions that are more or less directly related to body responses. What happens if you get very scared? Your heart starts to pound, you start breathing more heavily, and you feel a rush of heat across the surface of your skin. These are normal reactions, but they differ in each of us.

When each of us gets scared, excited, or angry our body tends to react. The fact is, whatever pattern of stirrings occurs when you get mad is likely to be the same pattern of

organ and glandular activity that you'll experience with *any* motivational or emotional experience! That is, whether you're mad, fearful, or excited, the pattern of organ activity will tend to be the same, and may be unlike that of anyone else. Perhaps your heart is most responsive, or your breathing rate, or any of several other body indicators of emotional reaction. This unique pattern of organ responses that each of us shows is called autonomic response specificity.

Other clues? Are there other physical changes that may indicate psychological states? It is known that when we are interested in someone or something, the pupils of our eyes tend to get bigger. Other changes are less sure. For instance, many years ago, psychologists thought that thinking might just involve sub-threshold muscle movements. They thought that maybe thinking was nothing more than silent "talking," and that by measuring minute muscle movements they could tell when thinking was occurring. Things aren't that easy. Later research showed that such small muscle movements -- whether of the eyes, the vocal chords, or the voluntary muscle -- are neither sufficient nor necessary for thinking to occur. Motivation is equally complex.

Hunger

To give you some idea of the complexity of our behavior, let's look at the factors we so far know are involved in a very important physiological motive -- the human experience of hunger. We've all experienced it. Several hours of hard dancing, or play at the beach, or hiking in the mountains and what happens? We're starved! There are several aspects of hunger to consider.

What makes us hungry? There are our obvious body needs for growth, repair, and storage of reserves. But even more important are the environmental cues, of which there are several. First, the simple sight and odor of food causes us to get hungry. Experiments have shown data indicating that the larger the stack of feed placed in front of chickens, the more they'll eat! The same tendency, unfortunately, has been found in us humans.

In the United States, we eat more at Thanksgiving or at any holiday meal, partly because the amount of food put before us is greater. Second, our prior experience plays a role. If you decide to skip supper today, you'll find you get hungriest right around the time when you normally eat supper. If you can get past that time, you'll find you begin to feel less hungry even though it's been longer since you ate.

Third, a variety of other environmental conditions also influence how hungry we get. For example, on a hot day our thirst increases, but our hunger drops. The colder it gets, the more calories we require to maintain our normal body temperature.

What Makes Us Start Eating?

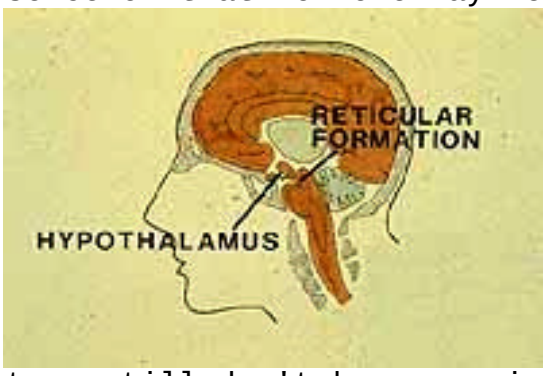
It is a fact of biology and physics that our body weight will remain constant only as long as the food we eat (that is, the energy we take in) equals the energy we expend. For example, what do you think would be the result if you simply took a deeper cut into the butter once each day and added one extra shake of dressing to your salad each night? If you were already fully matured and on a steady diet, those two changes would add 10 pounds to your body weight in a year! We must have very accurate control over how much we eat, but how is that control to be achieved?

Several answers have been suggested, but, first, what makes us decide to eat? Your first guess might be the obvious one; our stomach starts to growl when we get hungry. Do these stomach contractions actually cause us to eat? Enthusiasm for this idea died quickly when it was demonstrated that even with all sensory nerves to the stomach cut, people still got hungry.

Another possibility is body weight reduction. Certainly, if our food intake is reduced for a long period of time -- so long that we lose perhaps ten percent of our weight -- we are very hungry. Yet, the percent of body weight lost alone will not allow us to predict how hungry we may become. Only four hours may pass after breakfast yet by lunch time we'll be far hungrier than we might predict given our minor loss in weight.

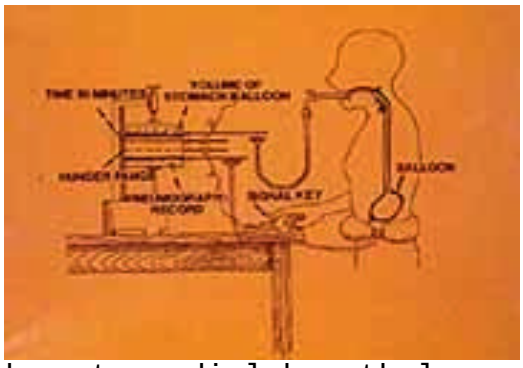
Hunger may also be caused by a factor in our blood. Hunger may result from a drop in our blood sugar level. In all but diabetics, insulin is a naturally-produced catalyst for the

process of converting sugar in the blood into stored energy and vice versa. Recently, a hormone released by the intestines in response to food intake has been shown to reduce eating. The absence of that hormone may lead to eating.



Finally, the hypothalamus is also involved. The lateral (side) hypothalamus is often called the eating center. And the ventromedial (meaning the bottom, central) portion of the hypothalamus is the satiety ("I'm full!") center. These centers were discovered in studies of brain stimulation, but we still don't know precisely what stimulates them.

And the story isn't finished. Work in the 80's indicated that these centers do not directly control eating. Rather, they are both involved in establishing the set point for our body's ideal weight. As our weight falls below that point, we tend to eat more; as we get above it, we tend to eat less. Apparently this balance between eating and not eating is monitored by the two centers in our hypothalamus. Work in the 90's has extended our knowledge even further. We now know that when we put on weight, we increase the number of fat cells in our body. When we take off weight, we do not lose fat cells; rather, each fat cell gives up a little bit, meaning the body is perpetually hungry.



Thus, eating is caused by environmental factors (time of day, smell of food, visible presence of food), deviations from our normal set-point for body weight, and internal factors, such as blood sugar level, the absence (or presence?) of selected hormones, and the lateral and and ventromedial hypothalamus. Much work remains to sort out the relative contributions of these factors. The death from self-starvation of singer Karen Carpenter in 1983 stimulated the study of anorexia nervosa, a complex emotional illness most often affecting young women. Some of the affected women have endangered (or lost) their lives by dieting to lose over 60 percent of their normal weight.

How Do We Stop Eating?

This is as vitally important an ability as is the fact that we start eating -- in some ways even more important. We can do without food for several days, but if we did nothing but eat food for several days we might kill ourselves. Getting ourselves to stop eating is a two-stage process.

First, head effects cause us to stop eating. A primary site where this is accomplished is our mouth. We know -- through practice usually at least three times a day for most of our lives -- about how much we should eat.

Experiments have been conducted with dogs whose esophagus (the tube connecting the mouth with the stomach) was operated upon. The dogs could chew and swallow their food, but the food was then diverted out of the body through through the side of the dog's neck. Such experimental dogs would eat more than they normally would, yet they still stopped eating, only to resume again later when their earlier eating had obviously been of no benefit to them. It's as if each dog had a "food meter" which allowed it to gauge how much food had passed its mouth. A similar factor causes us to stop eating.

There are also stomach factors. The fact that the dogs would eat more than normal before stopping when no food at all was reaching their stomach hints at the existence of the other factor. As our stomach fills, the load within also provides a cue to stop eating.

In addition, a hormone secreted by the intestines in response to food intake is released into our blood stream as mentioned in the What Makes Us Start Eating? topic. As the body chemical balances alter themselves because we've eaten, monitoring sites in the hypothalamus respond to this hormone and our blood-sugar level and control our longer-term ability to keep from eating. One of the major problems we humans face -- especially in the food-rich, North American societies is that of obesity, or long-term overweight. Recent work, for instance, has demonstrated that when our body weight is above our normal set-point, the efficiency of our digestive system declines. However, when our body weight is below our normal set-point, the efficiency of our digestive system increases. Feature 1 discusses some of the factors that seem to cause some of us to be overweight.

Feature 1

OVERWEIGHT? WHAT'S THE PROBLEM?

What keeps people overweight? Four things are involved. First, the more overweight we are, the more overweight we are able to become. Why? Because the larger a fat cell gets, the greater is its capacity to store fat. Bigger leads to even bigger! Overweight people tend to have higher base levels of insulin, a catalyst for converting sugar into fat. So metabolic changes increase our fat-producing and -storing capacities.

Second, inactivity is often blamed for overweight. But it's not true. Overweight people do seem to move slower the more they gain, but the obesity produced the slowness, not the other way around!

Third, unhappiness is sometimes blamed for overweight. You eat to comfort your miseries, right? Not really. As obesity increases, a person moves more slowly. That person thus needs fewer calories, but eats more in response to stimuli from his/her fat cells. This vicious circle eventually leads to personal unhappiness, but it's more a symptom than a cause of obesity.

Fourth, recent research has identified another surprising element that interacts with our body weight. When we are overweight, the efficiency of our digestive system declines. Overweight people can eat more, but use less of the calories they ingest. However, underweight people have a markedly more efficient digestive system. They wring more available calories out of everything they eat. The sad news is that when you diet to lose weight, your digestive system gradually increases its efficiency as your weight drops. The cuts in diet which may initially help you take off excess pounds are not sufficient to keep those pounds off! You have to cut your intake even further to keep your weight down. And so to the related question:

What makes people overweight? There's good evidence that a tendency toward obesity is set during the years of infancy, from birth until two. That critical period determines the number of fat cells we have throughout our life. Reducing the weight of obese children over age two reduces the size of their fat cells, but not immediately the number of them. As one psychologist has put it, " . . . a fat, bouncing baby may well grow into a fat, lethargic adult."

Obesity is thought to be caused also by environmental factors in early childhood. In one study, among 19 pairs of identical twins split up in infancy and raised separately, the

average difference in body weight between the twins in each pair was about 10 pounds. Among 25 pairs not split up but raised together, the average difference was only four pounds. Obviously, their environment had an impact on their tendency to gain or lose weight.

One classic study of obesity found that overweight people were very influenced in their desire to eat by the taste, smell, and sight of good food. The obese tend to rely too much on external cues to tell them whether or not to eat. In one experiment a clock indicated that it was "dinner" hour, although it was actually well before the normal eating time for the participants. They got hungry anyway, just on the cue from the clock!

USING PSYCHOLOGY: How can you control your weight?

In another Using Psychology section we discussed ways in which you can break a bad habit. Overeating is a bad habit that many people have in Western society. And being overweight is a major problem. Bad for you physically, those extra pounds can also have ruinous effects upon your social life, not to mention your self-image and problems getting clothes to fit.

So, if you are slim, how can you stay that way? And if you are overweight, how can you change your ways? Some tips are given in this Motivation chapter, and we'll summarize these first:

Remember that chickens -- and humans -- tend to eat more when more food is put before them. So, obviously, if you keep your portions modest, and the table free from full platters and heaped serving dishes, you'll be less tempted to overindulge. This modesty can reduce your eating in another way: Remember that a dog with its esophagus altered so that chewed food does not reach its stomach still stops eating when it has chewed about what it would normally eat. If you cut your food into smaller pieces and then chew each piece completely and swallow it before taking the next bite, you will eat less by stopping when you have "chewed" your normal meal's worth.

Within this chapter we also discuss that, as creatures of habit, we get hungry about the same time everyday. And if we fail to eat at the usual hours, our hunger will tend to fade, not increase. So, arrange interesting activities to carry you past your meal time, and you'll find it easier to eat less later on, though skipping meals is not a widely recommended basis for weight loss!

In addition to avoiding the environmental cues of sight, smell, accustomed times, and large amounts to eat, there is another method that works quite well -- that of increasing toleration. Increasing toleration involves scheduling exactly when the unwanted response is to occur. For example, suppose you are slowly gaining weight, and you wish to cut back on the amount you are eating between meals. Watch yourself and make notes of when -- under what conditions and at what times of day -- you find yourself nibbling crackers or peanuts or taking that extra soft drink.

If you are able to identify the stimulus that seems to cause you to eat -- whether it is another person who eats at the same time, or a particularly stressful situation -- so much the better. However, the important point here is that you must make an agreement with yourself. You must agree to wait a short time after you first get the impulse to eat before gratifying your craving. If the craving tends to occur around 4 o'clock, you must decide to wait until 4:01 or 4:02 before going to the kitchen the first day or two.

The trick, once you've got yourself in check that way, is to begin to lengthen the amount of time you must wait. After a couple of days, stretch yourself from 4:02, then 4:03, and so forth. This delay of self-gratification demonstrates that you can control your behavior. It also begins to give you more and more practice living with the craving without yielding to it right away. As you achieve success in getting yourself to wait longer and longer, you will begin to find that you're waiting almost until supper, by which time it isn't necessary to nibble at all. The result? Success! -- using the method of increasing toleration.

Thirst

What makes us thirsty? A healthy adult loses more than two quarts of water through natural processes each day. The two great storehouses of water within us are the fluid inside the cells of our body and the fluid outside those cells. The relative amount of salt in these two pools of liquid determines the balance of fluids between them.

If there is too little fluid in either reservoir, we become thirsty. This causes us to drink water (if it's available), which makes our kidneys more efficient in reclaiming water as they process waste products. What makes us start drinking? We can make ourselves thirsty by eating. After a particularly rich, creamy, chocolate milkshake, the first thing you want is a glass of water. Here you've added liquid and made yourself thirsty! Cells in our hypothalamus monitor the amount of water in our cells. The monitors for the amount of extra-cellular fluids are in our kidneys. Either the hypothalamus or the kidneys can stimulate drinking, but they tend to operate together.

Why do we stop drinking? Deprived of water for 24 hours, humans drink enough in two and a half minutes to replace missing fluids. The relative moistness of the mouth and fullness of the stomach are environmental cues that cause us to stop drinking. A lack of fluid can cause severe problems, but excesses are simply passed through the system.

Both hunger and thirst share a number of features. Both drives are physiological in nature. However, the environment may to some extent determine how hungry or thirsty a person gets. We may also acquire certain tastes -- for hamburgers rather than fish, for instance, or for lemonade rather than tea.

Think About It

The question: At the start of the chapter we described two girls who went to a party Both had had a big supper beforehand, yet at the party one ate much more than the other. Which of the two do you think is more likely to have better control of her eating habits? Why do you think so?

The answer: This question is a little tricky, since you would have had to have read the story carefully to pick up all the hints. It is likely, though, that the girl who ate more at the party probably has fewer problems with being overweight. People whose body weight set point is moderate and who have little difficulty staying at their desired weight often get trapped at a party.

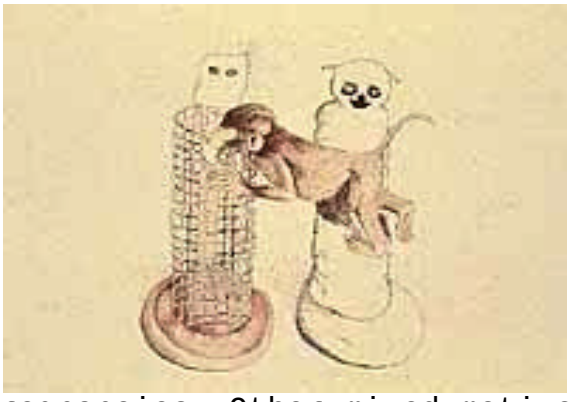
Without meaning to they tend to eat too much. Parties are exceptions for most of us We don't have much practice in standing on our feet with a lot of food and snacks around us. As a result the normal cues as to when we've eaten enough are missing. The conversation quoted mentioned the "huge dinner" that was eaten earlier by the speaker—a person who probably always overeats.

We also know that the light was dim (candlelight) and that people who regularly have weight problems tend to respond more strongly to the mere sight of food. Thus, we would guess that the person who was talking (the one who didn't eat as much at the party) is more likely to have trouble with her weight!

"Mixed" Motives

Let's look at some of our motives that have two contributing components. They have some physiological basis, yet they are also dependent on certain kinds of environmental stimulation -- obviously learned, critically important components. These "mixed" motives generate the greatest controversy and can be understood only by reviewing very different kinds of evidence. These motives include a broad variety. At one extreme there are pain and sex, which have easily documentable physiological underpinnings, yet are also impacted by experience.

Other mixed motives would include maternal needs. Prolactin -- a hormone which predominates in females after birth -- has been injected into virgin male or female rats. As a result, the injected rats engage in nest-building and initiate caring for any young rats in their environment. Yet, the influence of environmental factors in maternal activities can also clearly be demonstrated.



Harry Harlow's work with infant monkeys raised with surrogate mothers extended to studying how the surrogate children performed when they, in turn, became mothers. Clearly abusive of their first children, there was a practice effect in which the monkeys became more effective, less abusive moms in later pregnancies. Other mixed motives include activity, curiosity and manipulation, stimulation, and affection. These motives have some physiological basis, but some of the factors influencing them are obviously learned. Our need for stimulation is also discussed in the Stimulus Variation section. Sensory deprivation -- depending on its severity -- may lead to active hallucinations in as little as two hours. Physiologically we require an adequate level of incoming stimulation to maintain

normal perceptual, motor, and interpersonal skills. Yet, how much is too much?

The Figure suggests that young adolescents will scream in (mock?) terror on a roller coaster -- a learned preference and response. Yet, those same young teens will race around to get in line to be"terrorized" again when the roller coaster returns them to its starting point!

At the other extreme among our mixed motives are those such as affection, dominated by experiential factors, with relatively little contribution from physiological elements. Again, Harlow's work with infant monkeys raised by a surrogate mother is relevant. He has demonstrated that despite the inherited response tendencies of both mother and infant, the practice of interacting with normal mothers is critical to the achievement of normal adult status. Across the array of mixed motives, some -- such as pain and sex -- have clearly vital physiological components. Others -- such as stimulation and affection -- are much more influenced by learning.

Pain

Pain has two components. One is the perception or feel of pain. That's the awareness you experience when a doctor injects medication into your arm, or a friend twists your arm too far behind your back. Pain commands your immediate attention. That seems to be one of the purposes of pain. It serves as a warning when we do something -- or when something is done to us -- that may injure us. The other component is our interpretation of the pain -- our reaction to it. This has many aspects of a motivation.

We try to avoid pain, and we'll work to escape from it once it's there. So, there are two major elements of pain -- physiological and learned. Let's examine each of them.

The gate-control theory of pain suggests there are two systems that carry messages about pain away from the pain's location. Fast messages to our brain may alert its higher

portions to be ready to receive information. Or, they cause messages to be sent back down the spinal cord to inhibit slower incoming messages. The slow messages contain the actual information about the pain -- where it is, how much of the body is affected, and how serious the source of pain is. Thus, if the consequences of the fast messages have intercepted the slower messages and blocked or inhibited their processing by the brain, we may not feel the pain. This would explain how it is that athletes sometimes play for many minutes in a sports contest without even realizing that they have broken a bone.

A number of years ago some small Scottish terriers were raised in a totally isolated, heavily padded cage. They were fed, but they could only hear and smell other dogs and humans. The intent was to have the dogs mature in as pain-free an environment as could be created. Apparently they grew up healthy in almost every way. When they were tested at the age of 9-12 months, however, it was found that if you struck a match in front of these dogs, they would sniff it -- putting out the flame with their wet noses and burning themselves in the process. Most dogs only need to do that once to learn to stay away from matches. Not so with these raised-in-isolation Scottish terriers. Strike other matches and they'd repeat their painful experience again and again. These animals could perceive pain, but apparently they couldn't interpret it. It was as if they had missed some important learning experiences at an earlier critical period in their lives.

Humans experience pain in somewhat the same way. It's a sensory stimulus that is perceived and interpreted. Physiological elements -- sensors, nerves, and information processing -- and prior experience are combined to yield what we call pain. If the findings so far are correct, we may have to assume that our normal reaction to pain is an acquired (learned) motivation. Three factors are important in mastering pain. The first is anxiety. It is known that as our anxiety or worry about pain increases, the experienced pain grows worse. That's one reason we always seem to associate trips to the dentist with intense pain - we worry about it too much! The second factor is attention -- If our attention is distracted, we can reduce or almost eliminate our reactions to painful stimuli. The third factor is control -- If we control the amount of pain to which we are being subjected, we can tolerate more of it.

So how do we master our reaction to pain? If we can, we should reduce our anxiety and try to pay attention to something else. Also, we should gain as much control as possible over when and how much and how often the pain will be experienced. The Lamaze childbirth method is a good example. A woman in natural childbirth using the Lamaze method is taking part in a planned series of activities to reduce her anxiety. Her attention is diverted, and she is given activities including complex breathing patterns to gain control over the pain she experiences. The reports from many such mothers who have used the method make it undeniable that the method does work.

Sexual behavior

Sexual behavior is a mixed motive, drawing on both physiological and learned elements. It's unusual in that it is not at all important to the survival of the individual organism -- human or animal. Yet, it is crucially important to the survival of each species As a motive, sex resembles hunger and thirst in three principal ways. It is based on physiological mechanisms, it requires instrumental acts in order to be satisfied, and it is an approach motive, not an avoidance motive such as pain.

Yet, sex is very different from the physiological motives. There is no actual physiological need, and deprivation will not result in death -- which may call into question a lot of standard Saturday night lines. Unlike almost every other motive, responding to our sex drive expends energy, rather than increases it, as would happen if we've eaten or drunk needed substances. Thus we are weaker -- not stronger -- after we have satisfied our sex drive. Finally, sexual behavior in humans is much more dependent on environmental stimuli than for any other organism.

There are three groups of factors that influence our sexual behavior. First, the physiological factors include primitive reflex circuits in the lower spinal cord. Also the brain, especially our old friend the hypothalamus, plays an important role. And in higher animals, especially humans, the cortex plays an increasingly important role in sexual behavior -- more so for organisms higher on the animal hierarchy.

A second set of factors are hormonal. However, while hormones predispose us to be interested in sexual activities, they do not precipitate sexual behavior itself. As we move up the scale of animals we find that hormones play a less and less crucial role.

For us humans, the environmental factors or learned elements are the third and most important controllers of our sexual activities. In fact, much of what we call "sex" is learned behavior.

Tenderness and affection -- so much a part of human sexual activities -- are learned responses. Only with humans do these learned factors take precedence over the combined impact of hormonal and physiological factors. The basic elements on which such a relationship is built are learned during childhood. During this period we learn trust. We learn to accept and enjoy physical contact. We also develop the behaviors that our society considers "male" or "female." And we find pleasure in seeking the company of others.

In modern society, many people hold attitudes toward sexual behavior different from those held just 20 to 30 years ago when your parents were probably growing up. Various polls through the 70's and 80's clearly indicate this fact. Of course, there are also people who feel strongly that these changes are undesirable. This is often a source of conflict in society. In some cases a large, highly emotional gap has developed between the adolescent and older fellow humans concerning the issue of sex.

Certain biological facts, however, do not change. Sexual relations can still produce a child. The moral decisions in such matters are serious ones. To enjoy one's own life at the risk of creating another is not a decision to be lightly made. Help may be available from parents, but if not, numerous other services are available. From religious counseling centers to various community telephone hot lines -- help is there to aid you in thinking through the issues if you experience problems in this important area of life.

Psychological, or Learned, Motives

There are host of motives to which we respond that are primarily learned. Certainly they involve the responses of physiological components within our body, but they would not exist or function at all without key processes having been learned. It's not easy to determine which learned motives are most important. Are we to rank them according to the degree of our psychological need? The satisfaction they provide? We can, perhaps, decide on the basis of the number of people who seem to need to satisfy them, but this does not really provide the answer either.

Physiological processes play only an indirect role here. These learned motives are not aroused by physiological needs but rather by environmental cues. Aggression is viewed by some psychologists to be a mixed motive, including critical inherited processes activating the motive. We prefer the more hopeful view that we learn to be nasty to one another -- and thus, by implication, might one day learn to be more tolerant of each other. It’s a judgment call.

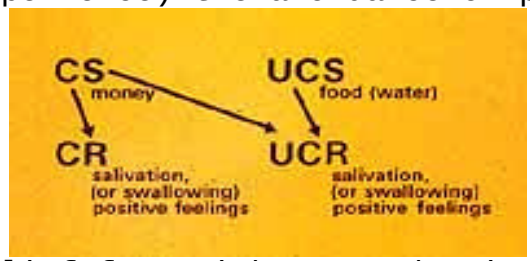
Other learned motives include defendance -- our need to ward off attack (whether physical or verbal) and to avoid being blamed for bad experiences of others. Affiliation is another such motive, identifying the satisfaction we derive from associating with others. This motive includes loyalty to others and likely is the basis for the maintenance of sororities and fraternities on college campuses and everything from bridge clubs to country clubs in the broader society. Social approval is perhaps the most global motive impacting humans. We all seek and enjoy the positive regard of others.

Certainly in North American societies achievement is among the strongest learned motives impacting our daily lives.

Discussed in detail in another section, achievement shares with other learned motives the facts that physiological processes still play an indirect, noncritical role. It is not aroused by specific physiological needs, but rather by environmental cues beyond the organism. Unlike the physiological motives in which the urge toward specific goals such as food and water is internally motivated, satisfaction of the learned motives, including that to achieve, is largely determined by attributes of the goal. In studying about learned motives it is good to remember that just naming a motive is not the same as explaining it. We need to anchor such motives to the independent variables which impact them and the dependent variables which are impacted by them.

Responding to Learned Goals

Our primary needs are for water, food, and (with experience) the avoidance of pain. The importance of secondary goals is learned, perhaps because of their relation to our primary goals. For instance, money gains its power as a secondary or learned goal because it buys us food, drink,and the means to get relief from sickness and pain. Money gives us food which leads to chewing, fluids which lead to swallowing and treatments of pain and illness which lead to experienced relief. The common element across all of these results is the positive feelings experienced after spending money. Theoretically, these positive feelings become a conditioned response to money.



Notice there's been a very important shift here. When the primary needs -- hunger or thirst -- exist, we are pushed by them toward a specific goal. We are driven to find food or water as is our need. On the other hand, the learned -- or secondary -- goals pull us toward them. The value of the goal has now become the primary motivating factor.

Several things determine whether we will respond to a particular learned motive. One is the availability of the response. We simply cannot succeed as a bricklayer if we do not

know how to mix the mortar. A second important factor is our expectancy of success. Very few of us would play basketball against a star of the Chicago Bulls in response to our need for achievement. We couldn't possibly expect to win.

Another factor determining how we'll respond is the value of the goal itself. Under many circumstances, as the value of the goal increases, so does the amount we'll do to try to achieve it -- up to a certain point -- as we discuss in the Achievement section.

Finally, the environment in which we find ourselves also determines how we'll respond. The stimuli that are present, the tools (and skills) we have, and the social pressures to which we are continually subjected all influence our responses to learned motivation.

Measuring Learned Motives

We discuss the techniques for assessing humans in more detail in the Testing Chapter. For now we'll give you just a brief preview of three techniques by which we measure various learned motives.

Projective tests use a neutral stimulus to draw responses from a person taking the test. These responses supposedly indicate the attitudes or feelings that are influencing his or her performance. One example is the Thematic Apperception Test, or TAT. Here the person is shown different pictures of people in various types of situations and asked to make up a story. He or she is to tell what led up to the pictured situation, what is going on in the picture, and what the probable results will be.

Inventory tests may use multiple choice questions, true-false questions, or simply a checklist in which you indicate whether items do or do not apply to you. One good example of an inventory test is the Taylor Manifest Anxiety Scale, or TMAS.

Table 1

A Test of Anxiety

Number on a sheet of paper from 1 to 50.
Mark each of the following statements TRUE if it describes you and FALSE if it does not.

1. I do not tire quickly.
2. I am often sick to my stomach.
3. I am about as nervous as other people.
4. I have very few headaches.

5. I work under a great deal of strain.
6. I cannot keep my mind on one thing.
7. I worry over money and business.
8. I frequently notice my hands shake when I try to do something.
9. I blush as often as others.
10. I have diarrhea once a month or more.
11. I worry quite a bit over possible troubles.
12. I practically never blush.
13. I am often afraid that I am going to blush.
14. I have nightmares every few nights.
15. My hands and feet are usually warm enough.
16. I sweat very easily even on cool days.
17. When embarrassed I often break out in a sweat which is very annoying.
18. I do not often notice my heart pounding and I am seldom short of breath.
19. I feel hungry almost all the time.
20. Often my bowels don't move for several days at a time.
21. I have a great deal of stomach trouble.
22. At times I lose sleep over worry,
23. My sleep is restless and disturbed.
24. I often dream about things I don't like to tell other people.
25. I am easily embarrassed.
26. My feelings are hurt more easily than those of most people.
27. I often find myself worrying about something.
28. I wish I could be as happy as others.
29. I am usually calm and not easily upset.
30. I cry easily.
31. I feel anxious about something or someone almost all of the time.
32. I am happy most of the time.
33. It makes me nervous to have to wait.
34. At times I am so restless that I cannot sit in a chair for very long.
35. Sometimes I become so excited that I find it hard to get to sleep.
36. I have often felt that I faced so many difficulties that I could not overcome them.
37. At times I have been worried beyond reason about something that really did not matter.
38. I do not have as many fears as my friends.
39. I have been afraid of things or people that I know could not hurt me.
40. I certainly feel useless at times.
41. I find it hard to keep my mind on a task or job.
42. I am more self-conscious than most people.
43. I am the kind of person who takes things hard.
44. I am a very nervous person.
45. Life is often a strain on me.
46. At times I think I am no good at all.
47. I am not at all confident of myself.
48. At times I feel that I am going to crack up.
49. I don't like to face a difficulty or make an important decision.
50. I am very confident of myself.

ANSWERS: Give yourself one point for all of the following statements that you marked TRUE: 2, 5, 6, 7, 8,10,11,13,14,16,17,19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 30, 31, 33, 34, 35, 36, 37, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, and 49. Give yourself one point also for all of the following that you marked FALSE: 1, 3, 4, 9, 12,15, 18, 29, 32, 38, 50. Now total the number of points you have. This is a rough estimate of how anxious you judge yourself to be. The higher you score yourself, the more anxious you think you are.

The midpoint for one sample of college students was at about 13.

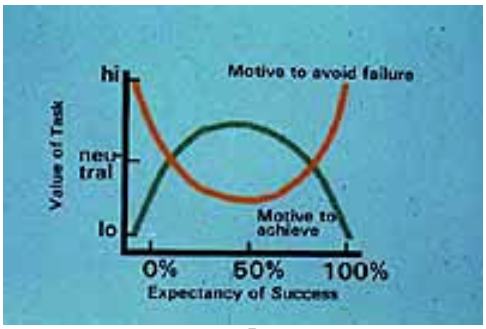
Table 1 has items drawn from this test -- 50 true-false statements about things that happen to you or describe you. Answer the questions either true or false as they apply to you. By scoring yourself, you can compare your score with those of 1,971 college students who took the test. See the Figure.

Situation tests measure your learned motives by creating a environment simply to observe your performance in it. Colleges hire assistant professors and (typically) give them six years in which to demonstrate their ability to teach and conduct research before promoting them to associate professor. This is a situation test. Rather than provide many details of such a testing situation, studies of the learned achievement motive involve research which has used all three types of tests in various situations. That research is summarized in our discussion of achievement.

Achievement

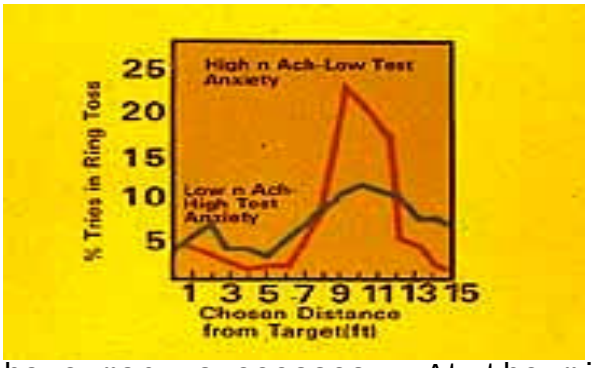
In most North American societies the emphasis on achievement is enormous. It's no wonder we end up highly motivated to achieve as adults. Some people don't, of course, but most do. Children with higher needs for achievement are most often raised in societies that do three things: First, they make early demands on an infant such as toilet training. Second, the child experiences a large number of such demands. Finally, these demands are made with great severity. All of these influence achievement motivation.

Psychologists believe this motive to achieve is composed of two subordinate motives -- a hope for success and a fear of failure. It is thought that the TAT that we discussed in the Measuring Learned Motive section measures our hope for success. The TMAS, also discussed in the same section, is thought to measure our fear of failure. So if we give both tests to someone, we should be able to combine the results to predict his or her motivation to achieve.



Look at the graph, which shows the results of one such study. A large number of students were given both the TAT and the TMAS. From this total group were chosen two types of individual. One group was made up up of those who scored high high on the TAT in need for achievement and low in the TMA as regards their anxiety. The second was a group that scored low on the TAT (indicating a low need to achieve) and high on the TMAS (meaning they were quite anxious). All of these people were then challenged to play a game of ring toss.

They could stand anywhere from one to fifteen feet away from the peg on the floor. The independent variable in the experiment was the test scores of the subject -- were they of low need to achieve coupled with high fear of failure or were they of high need to achieve with low fear of failure? The dependent variable was how far they chose to stand from the peg.



As was expected, those with a high need to achieve (and low fear of failure) stood at moderate distances from the stick. Too close and they could take no credit for any successes. Too far and they weren't likely to have have many successes. At the middle range they weren't likely to have many successes. At the middle range they could credit their own personal skill for any points they made. And those with a low need to achieve? Very different were they. They tended to stand very close, since they weren't looking for a challenge, or they stood very far away. Standing that far back they clearly could blame the distance and not themselves if they failed to achieve! It seems that the value of our success goes up as the likelihood of achieving success goes down. Yet as the probability of success goes down, the fear of failure goes up. Our own personal standards of excellence also affect the nature and severity of tasks we will choose for ourselve

Fear of Success -- A Women's Problem?

Early in the 1970's a challenging piece of research was published based on a simple projective test of men and women.

Participants were asked to complete the sentence seen in the Figure (a) if they were male and that in the Figure (b) if they were female. The resulting stories were scored to indicate attitudes towards success or failure.

Fears of success were measured by expressed fears, by guilt or worry about the success, or by denial of the success. It was found that 65 percent of the females' stories showed a fear of success when writing about Anne, but only nine percent of the males' stories showed fears of success when writing about John. Psychologist Matina Horner who made this discovery suggested that women must deal with success very differently from men. She said that successful women experience much more guilt, worry, or even denial of success than do successful men.

Such controversial results don't usually lie around unchallenged for very long, and these results certainly didn't, either. For example, notice (1) that the stories involve medical school, which had -- even into the late 60s -- been considered dominated by males, not females. Might this not cause some concern for the success of a female? Notice also that (2) there was no comparable group of males and females writing of the successes or failures of John and Anne in Nursing school -- traditionally a female-dominated realm. Finally, (3) society's values changed rapidly during the 70s as women made a lot of progress toward equal pay for equal jobs and more equal access to those jobs. That progress has continued to the point that those accepted into medical school today are statistically equally likely to be male or female.

Moreover, and perhaps in response to social values, females probably do not fear success itself as much as success gained at the expense of males -- and even that "fear" is declining. Remember our comments in the section on adolescents' self-concept regarding social pressures sometimes encouraging females to act inferior in the presence of males. To have properly conducted this study what is called a 2 x 2 x 2 design should

have been used in which men and women were to write about men's or women's success in medical school or nursing school. Any predictions as to how the results of such a study would turn out today?

Think About It

The question: Pam had won a scholarship in a city wide competition She refused to accept it because Jim, a male friend, had not earned one and she was afraid of upsetting him. What motives might she have had?

The answer: This is a very complex area of research, but we're beginning to gain some understanding. For most humans achievement is composed of a hope for success and a fear of failure. Females, however, also seem to fear success—especially if it is achieved at the expense of males. In many societies, females are trained to yield to the male.
What is apparently happening here is that Pam is reacting—perhaps without even being aware of it—to pressures she feels. She places her feelings for Jim and her fear of his reaction above her own opportunity for self-fulfillment. Such attitudes are changing rapidly in modern society.

Fear

Are fears inevitable? In some sense yes, they are. Fear is a constant part of the life of many persons. The experiment described in the caption for the Figure of Feature 10.2 summarizes why fears may be inevitable. Fear seems to be learned. And why? It occurs any time we experience trauma -- something we cannot immediately control. It has been suggested that a main purpose of fear is to get us into action to regain control of our environment. Feature 2 describes an enlightening experiment that has tragic implications. It teaches us that when we have prior experiences with being helpless, we are likely to continue to assume we cannot help ourselves even in situations where we can.

It's called conditioned helplessness. If we know we cannot control our environment, it also reduces our attempts to do so. This leads to fear, and that fear gives way to depression. If we can control our environment, then fear can aid us in seeking the responses we need to regain that control. In that way, fear is clearly serving as a learned, motivating force.

Feature 2

CONDITIONED HELPLESSNESS

Two groups of dogs -- we can call them the Haves and the Have-nots, if you like -- took part in an experiment. All the dogs were first put in a simple apparatus. Both groups were then treated identically except for one experience: The Have-nots received an inescapable shock to their paws. It didn't matter what the Have-not dogs did, they could not escape that shock to their paws. The Have dogs, in the same apparatus, were able to escape the shock to their paws by pressing or nudging a panel with their head. So the Haves learned they could escape the shock.

Then each dog was transferred for training to a standard shuttle box, like the one in the illustration.

A light came on in the chamber where the dog was, and a shock followed. All dogs could escape the shock by jumping across the barrier into the other chamber. Or they could avoid the shock entirely by jumping when the light itself came on. The same opportunity was available to all dogs -- both Haves and Have-nots

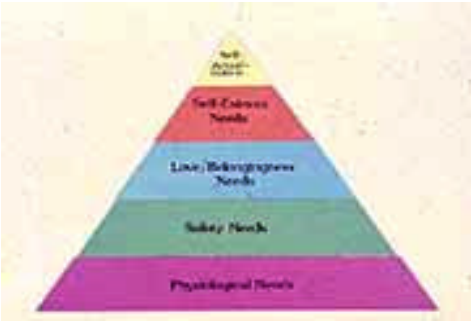
And what were the results? The Haves learned to escape perfectly, and as time wore on and they gained experience, they also learned to avoid the shock completely. Life was tolerable again. Not so for the Have-nots. Less than a quarter of the Have-not dogs learned to escape the shock in the shuttle box, and none of them learned to avoid the shock entirely.

It's as if the Have-nots had learned that nothing they could do mattered. In fact, this demonstrated what is now called conditioned helplessness. It didn't make the Have-nots feel any better, but at least the scientists can call them something besides confused Haves. They were conditioned to be helpless. Their prior experience with being helpless generalized (refer to the Learning Chapter if you're bewildered by that term) to situations where they could have acted to help themselves.

What do you suppose are the implications of this research in terms of human strivings and ambitions?

A Theory to Summarize

In the tremendous array of human motives -- from hunger to fear, from thirst to achievement -- is there any unifying element? How do they all relate to one another?



A psychologist named Abraham Maslow has proposed what he calls a hierarchy of needs. He suggests our needs are organized into five groups, as summarized in the chart. He suggests that most physiological needs must be satisfied before the needs for safety will become of primary importance. All lower level needs must be pretty well satisfied before the higher level needs become of concern. But, of course, these needs can overlap.

Maslow's is not a perfect theory. It's too global, and it focuses on motivations, not emotions (our subject in the Emotion chapter). Yet, it nicely blends physiological needs with learned ones. It also strikes a good balance between inherited features and environmental ones. And it accurately describes an order of needs that you yourself may have observed. For instance, in the mid-80s a large ship massively overladen with refugees from a country experiencing severe drought left one African country headed along the coast to another -- seeking food and water. The target country denied entry. As the UN tried to deal with the problem, hundreds of passengers launched themselves off the ship in a desperate attempt to swim to shore. And hundreds died. Here we see that safety -- a second level need -- is sacrificed if the most basic needs have not been met. Or consider the initiations that sororities and fraternities design for new members. They can get away with them because people will sacrifice their need for self-esteem in order to achieve a sense of acceptance and belonging.

The top level of need, self-actualization, identifies a person's need to express his or her highest human potential. Maslow says not many of us get that far. His use of a triangle to represent the theory suggests the declining numbers seeking the highest levels of satisfaction. A look at a few of the people who are considered to have reached a very high level of self-actualization suggests why: Eleanor Roosevelt, Albert Einstein, and Jimmy Carter among others. It's a select group -- but of course your own self-actualization can take place without your aiming quite as high as they did. Significant criticism of Maslow’s theory has surfaced -- suggesting, for instance, that the needs are not arranged in a hierarchy as precisely as Maslow advocated. It has been pointed out that Eleanor Roosevelt likely remained in a marriage that seriously devalued her, highlighted by her husband’s death, allegedly in the arms of his mistress. How might she then be considered self-actualized if

belongingness and some amount of self-worth might have been so severely battered?

REVIEW QUESTIONS

SECTION 1

1. Why is motivation such an important and useful concept?
2. Identify the six major elements of the motivational cycle and provide an example of each.

How are the six elements interrelated?

3. What is homeostasis? Provide an example.
4. What parts of the central nervous system are most important in the normal operation of physiological motives?

SECTION 2 (pages 280 - 286)

1. What are the body responses during motivational states?
2. What is autonomic response specificity? How does it relate to the study of motivation?
3. Name four or five hunger stimuli. What parts of the nervous system are involved?
4. When you're eating, what factors cause you to stop? What factors keep you from eating again immediately?
5. Name four or five factors that can make you thirsty.
6. What factors cause you to stop drinking?

SECTION 3

1. What does the term "mixed motive" mean as discussed in the text?
2. What kind of a motive is pain? Name the two major components of pain. What purpose does pain serve?
3. What determines the effects of incoming pain messages within the nervous system? What influences the reactions to such messages?
4. Name three means of lessening reactions to pain.
5. What kind of a motive is sex for humans? How does it differ from the sex motive in lower animals?

SECTION 4

1. How do physiological and psychological, or learned, motives differ in their effects?
2. Name four factors affecting whether or not a learned motive will result in action.
3. How can learned motives be measured?
4. What is achievement motivation? What hopes and fears does such motivation seem to involve?

5. What can fear motivate us to do? What are some possible outcomes?

SECTION 5

1. How does Abraham Maslow explain human motivations?
2. What are some possible flaws in Maslow's theory?

ACTIVITIES

1. Have you ever been on a hike or isolated by accident or natural disaster in such a way that you were without food for a while? If so, try to relate your behaviors regarding hunger to the motivational cycle discussed in this chapter. For instance, as your need for food developed, how did you experience the drive? Your goal was food, but what responses did you make to get to food? Was your behavior increasingly efficient in trying to locate food, or at some point did your behavior begin to become less efficient? What was your reaction to the goal of food once you'd reached it? After you ate, did the feeling of hunger take more time than usual to develop again, or did it take less time?

2. Read a book (such as Piers Paul Read's Alive) or a poem (such as Samuel Taylor Coleridge's The Rime of the Ancient Mariner) or go to a movie in which hunger or thirst plays a major part (such as Flight of the Phoenix -- most likely to be found on cable or a dish network). Trace the development of behaviors that can be credited to increasing hunger or thirst. Identify what the characters do to avoid the ill effects of hunger or thirst, and spell out how and why their behavior becomes more and then less efficient as they become more and more hungry or thirsty.

3. Gather a collection of pictures. These should include an attractive baby, a handsome male, a beautiful female, an automobile accident, and scenery such as a mountain or field. Under conditions of constant indoor (evening) lighting, show the pictures one at a time to a friend. Sitting across from your participating friend, you should hold up each picture so that you can look just over the picture at your friend’s pupils. Show each picture for 15 seconds or so.

Do you find differences in your viewer's pupils in response to each picture? What can you conclude about picture attractiveness and its relation to pupil size?

4. When you get up some morning, eat a normal breakfast, and then go without eating or drinking anything until supper. If you choose to do this experiment, do not read any further until you have done it; then come back and finish reading this. . . .

Now that you've fasted all day, think back. At what time between your normal breakfast and supper times did you feel hungriest? If this period was around your normal lunch time, were these "hunger pangs" caused by physiological needs or learned cues? If there were cues, list them. Did you get hungry any earlier than your usual supper time? If so, what cues made you hungriest?

5. There is a link between hunger and thirst in that you can reduce hunger slightly by drinking. In contrast, some foods make us thirsty. Which make you thirstier, sweet foods or salty ones? As an experiment, at the same time each day for two weeks try alternating between a snack of salted popcorn one day and a snack of vanilla ice cream the next. Follow your snack each day with as much water as makes you feel comfortable, recording the amount consumed. At the end of the two weeks -- but not before -- total the amounts you drank after eating the salty food and after eating the sweet one. Which food made you thirstier? Why?

6. Choose any learned motive, such as achievement. Over the next week record (a) when and where you display the motive, (b) the particular goal you are seeking at that time, (c) how successful you are in achieving your goal, and (d) how you might improve your behavior to advance your goal.

7. Persons trained in the psychology of pain reduction can teach others to control pain. If possible, call or talk in person to an instructor of a Lamaze class to find out the steps taught to prospective parents and the psychological principles involved.

INTERESTED IN MORE?

Beck, R. C. (1983). Motivation: Theories and Principles, 2nd ed. Englewood Cliffs, NJ: Prentice-Hall. This author covers both human and animal motivation. Of interest is the analysis of human motivation in terms of learned and physiological elements.

Bolles, R. C. (1975). Theory of Motivation, 2nd ed. New York, NY: Harper & Row. Has a strong section on physiological aspects of motivation, but this involves heavy reading.

Cofer, C. N. (1972). Motivation and Emotion. Scott, Foresman. A short but broad introduction to theories and behaviors that involve motivation. Good discussion of the relationship between motivation and emotion.

Hoyenga, K. B. & Hoyenga, K. T. (1984). Motivational Explanations of Behavior: Evolutionary, Physiological, and Cognitive Ideas. Pacific Grove, CA: Brooks/Cole. A well-written, well-illustrated, far-ranging look at motivated behavior -- from biology to social psychology. Good reading for the dedicated student.

Levenkron, S. (1982). Treating and Overcoming Anorexia Nervosa. New York, NY: Scribner's,. An excellent analysis of the causes and attempted cures for anorexia nervosa and related problems.

Murray, E. J. (1964). Motivation and Emotion. Englewood Cliffs, NJ: Prentice-Hall. Interweaves naturalistic observations with research conducted in both the clinic and the laboratory.

Packard, V. (1967). The Hidden Persuaders. D. McKay. A classic book that discusses the many and varied "tricks of the trade" used by advertisers to influence people's buying through ads, packaging, and the in-store environment.

Weiner, B. (1980). Human Motivation. New York, NY: Holt, Rinehart & Winston. Heavy emphasis on various theories of motivation makes this book tough going, but for those who are interested, it's an excellent introduction to psychologists' views of motivated behavior.