

THE NATURE OF FEELINGS

Carl Pacifico

Introduction

We experience the external world in two ways: through our thoughts and through our feelings.

Thoughts and feelings are commonly considered to be very different, even conflicting types of experience. Nevertheless, as will be shown, these are the two ways in which all people respond to the stimuli they detect.

As feelings are intangible, it is difficult to describe them in words, but everyone is familiar with these sensations. Some feelings last only a fraction of a second while others persist for days. Some are little more than a gentle tickle, while others are too strong to be controlled. Some feelings are intensely good; some are intensely bad, with almost every variation between these extremes.

What causes a feeling to occur? What is their purpose? Why do different people have a different feeling on detecting the same stimulus? How can the same person have different feelings on detecting the same stimulus at different times? Is there some mechanism that can connect all aspects of feelings?

This analysis proposes answers to these questions about feelings. It is an extension of the material on feelings published in "Think Better, Feel Better" (Pacifico 1990).

In The Beginning

This analysis of feelings begins with the earliest single-celled creatures, even though these creatures had no mechanism for feeling. Although these creatures were microscopic in size, they were complex chemical factories. They needed certain physical conditions for their survival, such as food, a tolerable temperature range, and a suitable pH range. They also needed to avoid conditions that would end their existence, such as toxic substances, rupture of their outer membrane, and predators.

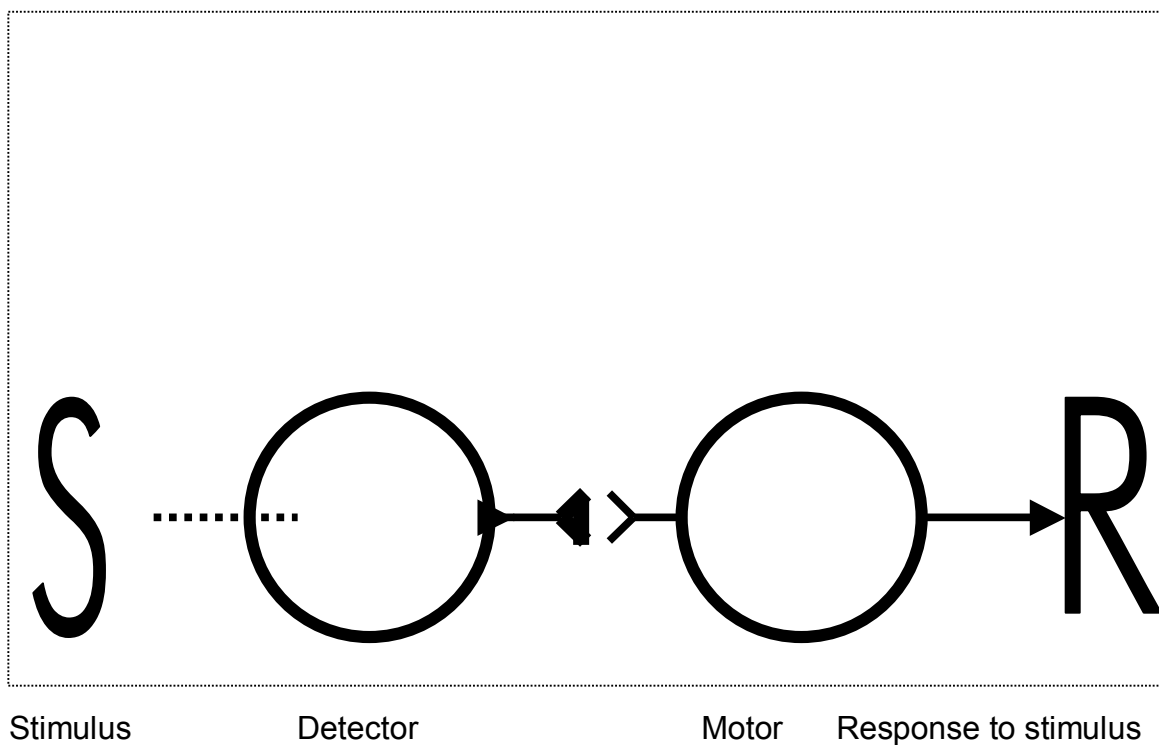
These "proto-cells" moved when they reacted with some items (i.e., "stimuli") in their environment. They always reacted with the same stimulus and always responded in the same way. No choice was involved. Some proto-cells moved toward a certain stimulus while others moved away from the same stimulus. Those that, by chance, always moved toward the things they needed for their survival, and away from items that might end their existence, survived. All others died.

These primitive creatures had no equipment to identify the stimuli they detected, so they didn't know what they ate or what ate them. Moreover, they had no equipment to feel one way or another about this result. Nevertheless,

they had a profound effect on the way all their descendants, including humans, think and feel. All creatures now respond to the stimuli they detect by moving toward potential benefits and away from threats or they become extinct. As a result of this dramatic evolutionary shakeout, the primary objective of all creatures is now survival.

The Survival Systems

The basic survival system – The mechanism by which these primitive creatures responded to a stimulus will be referred to as the “basic survival system.” Its elements are shown in the following diagram.

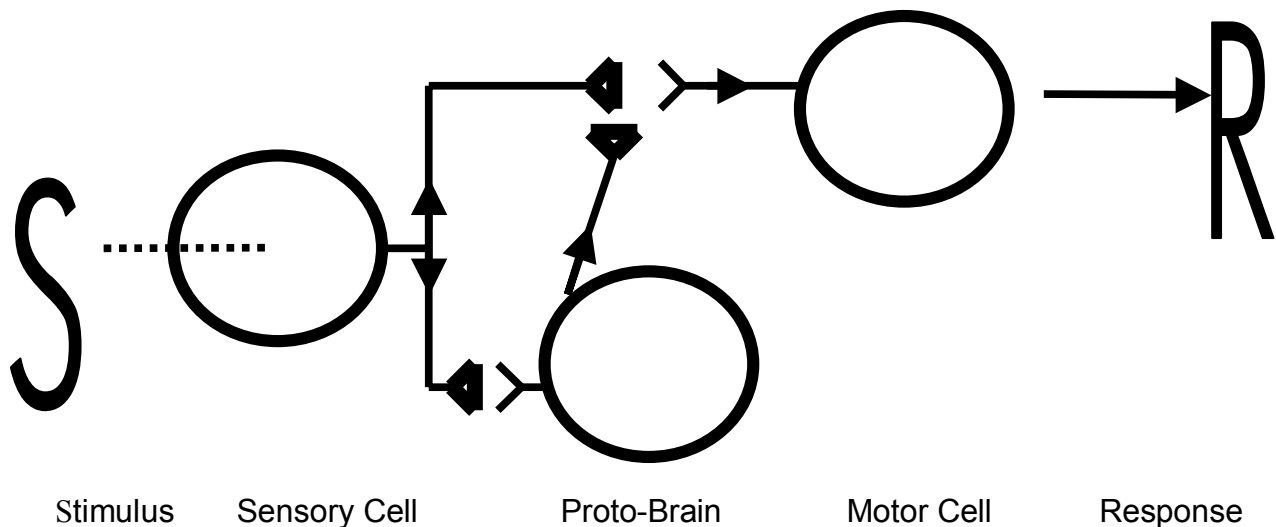


A stimulus is any item in the environment that reacts with a creature to initiate a physical response. This reaction takes place at a specialized location in the creature known alternately as a detector or a sensory cell. These locations are said to “detect” the stimulus.

Shortcomings of the basic survival system – Although the basic survival system is very effective, as shown by the continued existence of the descendants of these creatures after billions of years, it has a serious shortcoming. These creatures always respond to the same stimulus in the same way, even when the stimulus originates in different sources. For example, these primitive creatures have no way to know if a shadow represents prey, predator, or a harmless rock. Because they are unable to identify the source of the stimuli they detect, they

often respond inappropriately, sometimes fatally so, as when a moth moves toward a flame that kills it.

The advanced survival system – This shortcoming was partially solved when larger creatures evolved by adding another element to the basic survival system. The principal elements in the “advanced survival system” are shown in the following diagram:



The advanced survival system retains all the elements and activities of the basic survival system, but adds others. The sensory signal that is formed when the creature detects a stimulus still goes directly to the motor, initiating immediate movement. This movement will be called the “emotional response” to the stimulus.

The same sensory signal also goes to the new element, which is the beginning of a brain. The proto-brain extracts additional information from the sensory signal. This additional information is processed into an “intellectual signal” that is sent to the motor. It arrives a fraction of a second after the emotional signal, with which it merges. The function of the intellectual signal is to modify the creature’s emotional response to the stimulus in a way that increases its chances of survival.

The response of an advanced creature to the detection of a stimulus is a combination of these emotional and intellectual signals. For example, upon detecting a shadow, an advanced creature’s immediate emotional response

would be flight. In effect, the intellectual signal modifies this action with, “Hold on. It’s only a rock.”

This composite signal will be left in suspended animation at this point until another factor affecting feelings is introduced.

Identifying the Source of the Stimuli Detected

It is generally assumed that all creatures, both primitive and advanced, respond directly to the stimuli they detect. Creatures with the basic survival system do indeed respond directly to the stimuli they detect. Humans also do this occasionally, as in withdrawing from a hot object. However, stimuli are not complex objects but individual chemical molecules, variations in air pressure, and electromagnetic vibrations. To respond appropriately, advanced creatures need to know the source of the stimuli they detect. That is, we respond not to the stimuli, but to their object that formed the stimuli. For example, we don’t respond to the molecules we detect in coffee aroma, but to their source, the coffee.

As noted earlier, primitive creatures have no way to identify the source of the stimuli they detect. But, surprisingly, neither do advanced creatures, including people. Each identification of the source of a set of stimuli is an assumption, which might or might not be correct. For example, our ancient ancestors detected the form and color of an object in the sky. They interpreted this set of stimuli as a god. Our more recent ancestors interpreted the same set of stimuli as a mass of burning coal. We now assume that the stimuli represent a nuclear reaction. Same set of stimuli, but no one prays to a coal furnace or a nuclear reaction. In short, we respond not to the actual source of the stimuli we detect but to our current identification of their source, whether our assumption is correct or incorrect.

The Formation of A Feeling

With this background, we return to the composite signal formed by the detection of a set of stimuli. This composite signal goes to the motor cortex, where it initiates a physical response to the source of the stimuli.

The composite signal also causes a sensation (i. e., a “feeling”) within the brain. The sensation that occurs depends on how that person’s interpretation of the source of the stimuli might affect his or her survival. When someone interprets the source of the stimuli as promoting survival, he or she always feels some variation of “good.” The feeling that occurs when the source is interpreted as a threat is always some variation of “bad.” In short, a person’s feeling on detection of a set of stimuli is determined by how his or her brain interprets its source, correctly or incorrectly.

A person also detects the conditions present after he or she has responded to the source of the stimuli. The response might or might not have achieved its objective. This person feels good when his or her response achieves its objective of obtaining a benefit, such as capturing prey. He or she also feels good when he or she achieves the objective of escaping a threat. In contrast, he or she feels bad when his or her response fails to obtain the benefit, as when the prey escapes, or when he or she fails to escape a threat (provided, of course, he or she is still capable of feeling).

In summary of this point, advanced creatures, including people, always feel good when they detect a set of stimuli they interpret as a benefit and when they achieve any objective. They always feel bad when they detect a set of stimuli they interpret as a threat and when they fail to achieve an objective. That is, people feel good when their response promotes their survival and feel bad when it reduces their chances of survival.

The feeling that occurs upon detection of a set of stimuli that affects survival is very specific. A person never feels bad when he or she interprets a set of stimuli as a potential benefit and never feels good when he or she interprets the stimuli as a threat. Moreover, someone who interprets a set of stimuli as affecting survival never has any feeling other than good or bad, not envy, remorse, amusement, etc.

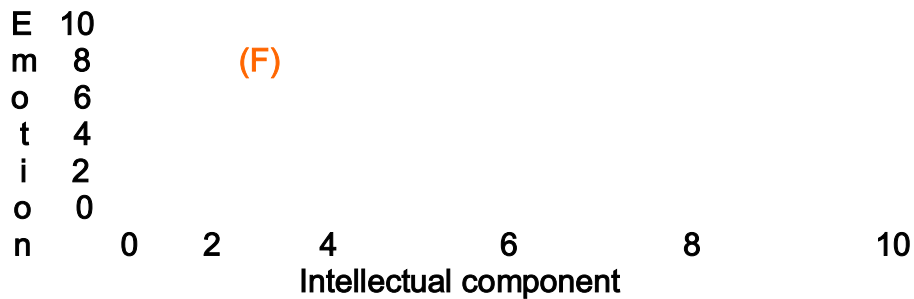
A Matrix of Feelings Upon Detection of a Threat or a Benefit

When its survival is at stake, an advanced creature sometimes responds to a set of stimuli entirely emotionally; that is, without waiting for the arrival of the intellectual signal. For example, it might flee in panic from a threat, or when it is starving, pounce ineffectively on unsuitable prey. Almost always, however, advanced creatures respond to a set of stimuli by a combination of emotional and intellectual signals. As a feeling is formed by these same signals, it is also has a combination of an emotional and an intellectual component. As a result, three variables affect the feeling that accompanies a person's physical response to his or her interpretation of the source of the stimuli detected:

1. Whether the stimuli detected are assumed to be a benefit or a threat to that person's survival.
2. The intensity of the emotional component, which is determined by how much benefit or harm the assumed source of the stimuli might do to that person.
3. The intensity of the intellectual component, which is determined by the amount of information, correct or incorrect, in that brain about how to deal with the assumed source of the stimuli.

This combination of the emotional and intellectual components can be shown as a position in a two-dimensional matrix:

- The intensity of the emotional component is plotted along the vertical axis (the “Emotional” axis) of the matrix. The scale for this axis is a measure of the intensity of the emotional feeling caused by that person’s interpretation of the source of stimuli detected. This hierarchy of emotional responses can be subdivided into convenient units, such as a scale of zero to ten, as shown below. The emotional intensity of any feeling can then be measured approximately by locating its position in this hierarchy. That is, position 1 represents a minor emotional feeling caused by a threat or an opportunity. The higher the location on this scale, the greater the intensity of the emotional component.
- The intensity of the intellectual component is represented along the horizontal axis (the “Intellectual” axis). This axis can also be subdivided into a convenient number of units. The location along this axis is a measure of the quantity of information, correct and incorrect, that this person has about the assumed stimulus and how to deal with it. The higher the number, the more information that person has to arrive at an appropriate response to the stimulus.
- Each combination of an emotional and intellectual component represents a feeling in the matrix. For example, a feeling (F) in the following diagram has a strong emotional component (E8) with a weak intellectual component (I3).

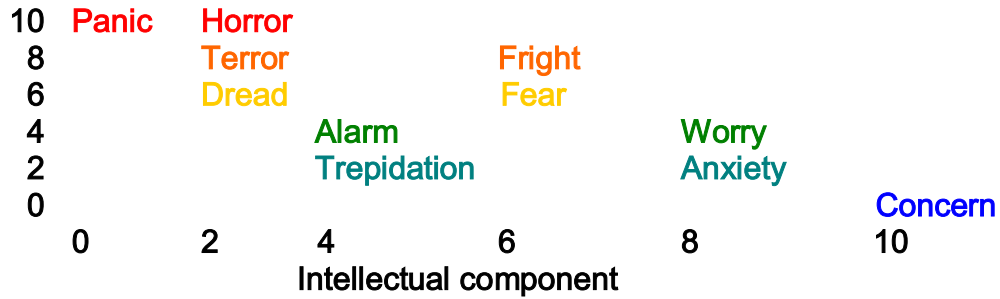


Identifying a Feeling

We all have the capacity for about the same feelings. We identify our feelings by assigning them a label. We have “panic” attacks or we suffer “depression.” We feel “happy” or “sad.” Although we use these labels in our communication with others, there’s no assurance that the same label represents the same feelings in different people. Moreover, there are some unnamed gaps in our matrix of feelings, while other feelings overlap to some extent.

A partial matrix of the feelings that occur when an assumed threat is detected is shown below:

Matrix of Feelings upon Detection of a Threat



An example might clarify how this matrix of feelings works. A woman learns that she has a lump in her breast. As she interprets this as a serious threat to her survival, her emotional response is at the level of E6 in the diagram. As she knows little about breast cancer except that it kills many women, she has only a weak intellectual component, say I2. As a result, her feeling is located at (E6, I2) in the diagram, indicating that she has a feeling of “dread.” When her doctor confirms that she does indeed have breast cancer, her emotional component increases to E8, so that she feels “terror”. However, as she learns more about the progress being made in treating cancer, the strength of her intellectual signal increases, which changes the nature of her feelings to (E8, I6), which is “fright.” If she learns that her cancer is easily curable, her feelings might change to (E2, I10), which is “concern”.

Matrix of Feelings Upon Detection of a Benefit



In summary of this segment,

- A feeling occurs whenever a set of stimuli that affects survival, directly or indirectly, is detected.

- The feeling that occurs when the stimuli are interpreted, correctly or incorrectly, as a potential benefit is some variation of ANTICIPATION OF A BENEFIT. The feeling that occurs when the stimuli are interpreted as a threat is some variation of FEAR.
- The feeling that occurs is determined by the intensity of its emotional and intellectual components.
- This combination of emotional and intellectual components results in a matrix of related feelings.
- Different people have different feelings upon detection of the same set of stimuli because:
 - They interpret the source of the stimuli differently, which results in different intensities of the emotional component.
 - They have different information about how to deal with the source of the stimuli detected, which results in different intensities of the intellectual component.
 - There is some difference among people for the same sensation because:
 - Different people might subdivide the spectrum for any level of intensity of the emotional signal differently.
 - Different people might interpret the same sensation differently. That is, what one person interprets as “anxiety” might be considered “concern” by someone else.

The Effect of Social Approval on Feelings

A very brief summary of human social evolution might be helpful in understanding the feelings that occur when certain types of stimuli are detected.

Our ancestors were very much like us in body and brain size by 100,000 years ago and probably earlier. Nevertheless, they struggled alone or in small family groups to obtain the physical requirements for their survival. About 40,000 years ago, a major change occurred. Our ancestors started to live in small cooperative groups. Acceptance by the group greatly increased a member's chances of survival. Expulsion from the group was a sentence to an unpleasant death. As a result, social acceptance became a requirement for survival almost as strong as that for their physical needs.

Although membership in a group improved an individual's chances of survival, it didn't assure it. At times, the cooperative group itself had difficulty surviving. It had to eliminate some members so that the others could live. This decision was not done by an impartial lottery. The group first expelled the least valuable member, then the next least valuable, and so on. This process established a hierarchy based on the value of each member to the group. As a result, each member tried to improve his position in the hierarchy to increase his

or her chances of survival. This need was passed on to their descendants, so that almost everyone continues to respond to stimuli in a way he or she thinks will attain, retain, or increase his or her social acceptance.

All indications of social acceptance increase a member's chances of survival and so cause good feelings. All indications of disapproval have the opposite effect. The intensity of these feelings depends on the degree to which the set of stimuli detected affects survival. For example, a compliment from another member had less effect on survival than the same compliment from the group leader and so initiates less satisfaction. A criticism from a person of equal status is less painful than the same criticism from a person of superior status. As a result, the matrix of feelings that occurs when a person detects a set of stimuli that affects his or her social approval is similar (though not quite identical) with those that occur when this person detects a set of stimuli affecting his or her physical survival. (The principal difference will be described in the section on Multiple Stimuli.)

Feelings Associated with Social Approval

As noted, social approval became a need almost as strong as the physical requirements for survival. As a result, the interpretation of all stimuli that affect social approval initiate a matrix of feelings similar to the matrix for stimuli that affect physical survival. Detection of an indication of social approval makes a person feel some variation of good. Detection of disapproval makes a person feel some variation of bad.

As with all feelings, those involving social approval have an emotional and an intellectual component:

Emotional component – The intensity of the emotional component is determined by the probable effect of the stimuli detected on that person's social approval. However, the emotional component is based not on the correct interpretation of the meaning of the stimuli, but on that person's interpretation, which might or might not be correct. For example, he or she might interpret a compliment as an insult, or vice versa.

A hierarchy of events can be constructed for their probable effect on a person's social approval. An example is shown below for positive indications of social approval. A corresponding hierarchy can be constructed for indications of social disapproval.

- Election or appointment to increased power and authority
- Inclusion in making major decisions for the group
- Entrustment with major responsibility
- Award of honors, titles, recognition
- Promotions

- Increases in salary
- Invitations to social activities
- Favorable comments made to others
- Compliments
- Greetings

Intellectual component – The intensity of the intellectual signal is based on that individual's information on how to deal with the situation. For example, one person might be confident that he can handle new responsibilities while another might be afraid that he will fail. One person might feel secure against negative comments while another person feels vulnerable.

Other stimuli associated with social acceptance – There are also matrices of good and bad feelings that occur when someone helps or hurts your chances of survival, including your social approval. These feelings are directed at the person who caused them. The intensity of the emotional component of these feelings is determined by how much that person helps or hurts you. The following list is an example of a hierarchy of actions that reduce your social approval:

Those who reduce your social approval

- Evict you from power
- Blame you for a major problem of the group
- Accuse you of wrongdoing
- Disclose unfavorable information about you
- Insult you
- Compare you unfavorably with others
- Talk down to you
- Criticize you
- Ignore you
- Refuse to return your greeting

The matrix of feelings for those who decrease your social approval is some variation of ANGER, ranging from RESENTMENT to HATE.

A corresponding matrix exists for those who help you survive or improve your social approval. These stimuli cause a matrix of feelings centered on GRATITUDE.

Feelings in a Memory

Recall of a memory results in the same sensory signals as the original detection of the stimuli in nature. As the brain has no way to identify the source of these sensory signals, it treats the signal for a memory in the same way as a signal for the direct detection of a stimulus. In short, the recall of a memory

causes the same feelings as the original stimuli did, as many combat veterans can attest.

Feelings in Other Internally Generated Stimuli

A brief digression is required here to introduce another factor that affects feelings.

Primitive creatures detected only those stimuli that exist in their environment at that time. Humans also detect real stimuli but, in addition, can conjure up internally the assumed source of a set of stimuli that is not present externally at that time. This occurs because the human brain combines stimuli detected in one place at one time with stimuli detected at other times in other places. Most such combinations cannot be interpreted, even incorrectly, as objects in the real world, and so are meaningless. Occasionally, however, this combination of stimuli unconnected in nature resembles something that might be an object in the real world, such as a flying elephant, Superman, or midgets from Mars.

As the brain has no equipment to identify where its information originated, it responds to an internally generated stimulus (IGS) in the same way it responds to its interpretation of real stimuli.

The feeling caused by an IGS that does not exist in the real world is determined by how much of a threat that person assumes it to be. Santa Claus, true love, and an investment that will double in three months initiate some variation of ANTICIPATION OF A BENEFIT and so feel good. Interpretation of broken mirrors as bad luck, images of fiery dragons, and sulfurous odors emanating from a field initiate some degree of FEAR. In short, the matrix of feelings caused by an IGS is about the same as that for the detection of a set of real stimuli.

One region of this matrix of feelings associated with survival is worth a special comment. This is the set of feelings initiated by the interpretation of stimuli that are unknown or incompletely known, such as an atomic energy plant, a chemical waste dump, or a new disease. Ancestral creatures that did not interpret a serious threat correctly the first time had no opportunity to do so later. Their survivors, including humans, now interpret all unknown and incompletely known sets of stimuli as serious threats. The intensity of the emotional component is determined by the damage that the assumed threat might cause, and so is usually very high. As that person knows very little about how to deal with the threat, the intensity of the intellectual signal is very weak. The usual result (E9, I1) of incompletely known stimuli is a feeling of fear so intense that it initiates a movement, as in panic.

Multiple Stimuli

The analysis to this point has dealt with detection of a single set of stimuli. However, people are frequently required to deal with two or more sources of stimuli simultaneously. Occasionally, a single response is appropriate for all sets of stimuli. More often, a response that is appropriate for one set of stimuli is inappropriate for the others. For example, a high school senior would like to go to college but also would like to earn money to help his parents. If he responds by going to college, he will have a positive feeling for that choice but a negative feeling for not helping his parents. If one alternative is much stronger than the other, he can choose it and have a net positive feeling. Or he might decide on a response that has partial success with both alternatives by working part time and attending a community college, in which case he would have the sum of two weak positive feelings. In short, the feelings that occur in response to multiple sets of stimuli are additive, with an intensity determined by how much the source of each set of stimuli affects survival or social approval.

Social approval – It was noted earlier that a person's response to a set of stimuli representing social approval is similar to that in response to stimuli that represent the physical requirements for survival, so that their matrices of feelings are similar except in a certain condition. That certain condition occurs when the set of stimuli detected affects both physical survival and social approval. In most cases, survival is a stronger objective than social approval, as in stealing food when starving. Nevertheless, some people in some situations have so strong a need for social approval that they automatically respond in the way that satisfies it. This usually occurs in desperate conditions, such as the emotional response of falling on a grenade before the intellectual component of self-preservation stops it. Another example is suicide, where the pain of the inability to obtain social approval is stronger than that of a quick death.

Self-denial – An interesting matrix of feelings occurs when someone makes a choice between achieving social approval and obtaining a benefit that involves pleasure but not survival. Those who have a strong need for social approval respond by giving up pleasures, going to church instead of a golf course, and wearing tight collars and ties. What they lose in physical pleasure is more than made up in increased social approval so that they have a matrix of feelings of SATISFACTION and SUPERIORITY to others.

However, if they occasionally select pleasure over social approval, they are overwhelmed with bad feelings of GUILT and REMORSE.

The Function of Feelings

This analysis indicates that feelings serve the invaluable function of informing that person how his or her interpretation of the source of the stimuli detected affects his or her chances of survival. To sum up this point:

1. Detection of any item that promotes survival feels good. This includes items that contribute to physical survival and those that indicate social acceptance.
2. Detection of any item interpreted as a threat to survival feels bad. This includes all items that might interfere with that person's physical requirements, such as excessive heat or cold, an illness, or a predator. It also includes all items that reduce social acceptance, such as making an error, causing dissension, or seeing a competitor advance in a hierarchy.
3. Obtaining a benefit and escaping a threat also increase a person's chances of survival and therefore feel good. As these are the objectives of all responses to stimuli, the achievement of any objective feels good.
4. Failure to obtain a benefit or to escape a threat reduces a person's chances of survival and therefore feels bad. As this applies to all responses to stimuli, the failure to achieve any objective feels bad.

Unnecessary Bad Feelings

The identification of the source of the stimuli detected is an assumption that is sometimes incorrect. Nevertheless, the brain responds to the assumption instead of the actual source of the stimuli detected. For example, detection of a box with a pretty ribbon might be interpreted as a present, causing good feelings. This person then advances toward the box to obtain the assumed benefit of its contents. However, the box might be a camouflaged booby trap. The response that would be appropriate for the assumed item is inappropriate for the true source of the stimuli.

Even when the source of the stimuli detected is identified correctly, that person's information on how to deal with it might be incomplete and/or incorrect. For example, even if the box is recognized as a booby trap, that person might not know how to defuse it, resulting in an explosion. Because of that person's incomplete or incorrect information, his or her response does not achieve its objective, causing bad feelings.

The only appropriate bad feelings occur when someone detects a threat to physical survival that cannot be dealt with, as with a diagnosis of an incurable cancer. All other bad feelings occur through mistaking a beneficial or neutral item as a threat or in having incomplete or incorrect information about how to respond appropriately to the true source of the stimuli detected. These bad feelings occur because of errors in the thinking process and so can be reduced by improved thinking.

Just as physical pain is a warning that something is wrong in the body, unnecessary bad feelings are a warning that something is wrong in the thinking process.

Changing Your Feelings

It is widely assumed that, like habits, changing feelings is difficult, if not impossible. However, the only unavoidable negative feelings are those that occur when a real threat is identified correctly. All other bad feelings occur through incorrect identification of the stimuli and/or through incorrect or incomplete information on how to deal with it. These unnecessary bad feelings can be avoided or reduced by improved thinking. Changing erroneous information changes the location of the emotional and intellectual components in its matrix, thus changing the feeling.

There are three principal ways to change a feeling:

1. Identify the source of the stimuli detected externally more correctly. This might require gathering additional sensory data about the stimulus. At minimum, determine if the source of the stimuli is really a benefit or a threat.
 - Keep in mind that all interpretations of internally generated stimuli are assumptions that might or might not be correct.
 - An internally generated stimulus formed by recall of a memory might not correctly represent the event that formed it.
2. Your information on how to deal with the source of the stimuli might be incomplete. Obtaining more information on how to respond appropriately increases the intensity of the intellectual component and so changes the feeling. For example, the more a person knows about dealing with dangerous substances, whether explosives or microbes, the less intense his fear. All unnecessary fears can be reduced by learning more about their source.
3. Replacing incorrect items can also eliminate unnecessary bad feelings. However, this is not easy to do because the brain has no internal way to know which of its items are incorrect. In addition, the brain tends to reject as incorrect any new item that is contradictory to the information it already has. So while correct information blocks out incorrect new items, incorrect information just as effectively blocks out correct new items.

This obstacle can be reduced, and sometimes overcome, by considering all your present information to be unproved. This reduces the conflict with new items and so allows them to enter your brain.

Additional correct information increases the intellectual component of the matrix and so reduces your unnecessary bad feelings.

These techniques for changing feelings also answer some questions posed in the Introduction. As different people have different information about the source of the same set of stimuli and how to deal with it, they have different feelings when they detect it. Also, a person has a certain feeling when he detects a set of stimuli; say a dog that might attack him. However, he is confident that he has the strength and skill to defend himself, so his feeling is that of caution. This person then suffers an injury that decreases his mobility. If he detects that dog again, the intellectual component of his feeling is reduced, so that his feeling becomes FEAR.

By understanding the nature of feelings, you can control them instead of having them control you.

Carl Pacifico
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