LEARNING TO BE DEPRESSED

Seligman, M. E. P., & Maier, S. F. (1967). Failure to escape traumatic shock. *Journal of Experimental Psychology, 74,* 1–9.

If you are like most people, you expect that your actions will produce certain consequences. Your expectations cause you to behave in ways that will produce desirable consequences, *and* to avoid behaviors that will lead to undesirable consequences. In other words, your actions are determined, at least in part, by your belief that they will bring about a certain result; they are contingent upon a certain consequence.

Let's assume for a moment that you are unhappy in your present job, so you begin the process of making a change. You make contacts with others in your field, read publications that advertise positions in which you are interested, begin training in the evening to acquire new skills, and so on. All those actions are motivated by your belief that your effort will eventually lead to the outcome of a better job and a happier life. The same is true of interpersonal relationships. If you are in a relationship that is wrong for you because it is abusive or it otherwise makes you unhappy, you will take the necessary actions to change it or end it because you expect to succeed in making the desired changes.

All these are issues of power and control. Most people believe they are personally powerful and able to control what happens to them, at least part of the time, because they have exerted control in the past and have been successful. They believe they are able to help themselves achieve their goals. If this perception of power and control is lacking, all that is left is helplessness. If you feel you are stuck in an unsatisfying job and you are unable to find another job or learn new skills to improve your professional life, you will be unlikely to make the effort needed to change. If you are too dependent on the person with whom you have a damaging relationship and you feel powerless to fix it or end it, you may simply remain in the relationship and endure the pain.

Perceptions of power and control are crucial for psychological and physical health (refer to the discussion on the research by Langer and Rodin earlier in this book on issues of control for the elderly in nursing homes. Imagine how you would feel if you suddenly found that you no longer had the power or control to make changes in your life, that what happened to you was independent of your actions. You would probably feel helpless and hopeless, and you would give up trying altogether. In other words, you would become depressed.

Martin Seligman, a well-known and influential behavioral psychologist, proposed that our perceptions of power and control are learned from experience. He believes that when a person's efforts at controlling certain life events fail repeatedly, the person may stop attempting to exercise control altogether. If these failures happen often enough, the person may generalize the perception of lack of control to all situations, even when control may actually be possible. This person then begins to feel like a *pawn of fate* and becomes helpless and depressed. Seligman termed this cause of depression, *learned helplessness.* He developed his theory at the University of Pennsylvania, in a series of now classic experiments that used dogs as subjects. The research discussed here that Seligman conducted with Steven Maier is considered to be the definitive original demonstration of his theory.

THEORETICAL PROPOSITIONS

Seligman had found in an earlier experiment on learning that when dogs were exposed to electrical shocks they could neither control nor escape from, they later failed to learn to escape from shocks when such escape was easily available. You have to imagine how odd this looked to a behaviorist. In the laboratory, dogs had experienced shocks that were designed to be punishing, but not harmful. Later, they were placed in a *shuttle box,* which is a large box with two halves divided by a partition. An electrical current could be activated in the floor on either side of the box. When a dog was on one side and felt the electricity, it simply had to jump over the partition to the other side to escape the shock. Normally, dogs and other animals learn this escape behavior very quickly (it's not difficult to see why!). In fact, if a signal (such as a flashing light or a buzzer) warns the dog of the impending electrical current, the animal will learn to jump over the partition before the shock and thus avoid it completely. However, in Seligman's experiment, when the dogs that had already experienced electrical shocks from which they could not escape were placed in the shuttle box, they did not learn this escape-avoidance behavior.

Seligman theorized that there was something in what the animals had learned about their ability to control the unpleasant stimulus that determined the later learning. In other words, these dogs had learned from previous experience with electrical shocks that their actions were ineffective in changing the consequence of the shocks. Then, when they were in a new situation where they did have the power to escape—to exercise control—they just gave up. They had learned to be helpless.

To test this theory, Seligman and Maier proposed to study the effect of controllable versus uncontrollable shock on later ability to learn to avoid shock.

METHOD

This is one of several classic studies in this book that used animals as subjects. However, this one, probably more than any of the others, raises questions about the ethics of animal research. Dogs received electrical shocks that were designed to be painful (though not physically harmful) in order to test a psychological theory. Whether such treatment was (or is) ethically justifiable is an issue that must be faced by every researcher and student of psychology. (This issue is addressed again after a discussion of the results of Seligman's research.)

Subjects for this experiment were 24 "mongrel dogs, 15 to 19 inches high at the shoulder and weighing between 25 and 29 pounds" (p. 2). They were divided into three groups of eight subjects each. One group was the *escape group*, another the *no-escape group*, and the third was the *no-harness control group*.

The dogs in the escape and no-escape groups were placed individually in a harness similar to that developed by Pavlov (see the discussion of Pavlov's methods in chapter 3, Learning and Conditioning); they were restrained, but not completely unable to move. On either side of the dog's head was a panel to keep the head facing forward. A subject could press the panel on either side by moving its head. When an electrical shock was delivered to a dog in the escape group, it could terminate the shock by pressing either panel with its head. For the no-escape group, each dog was paired with a dog in the escape group (this is an experimental procedure called *yoking*). Identical shocks were delivered to each pair of dogs at the same time, but the no-escape group had no control over the shock. No matter what those dogs did, the shock continued until it was terminated by the panel press of the dog in the escape group. This ensured that both groups of dogs received exactly the same duration and intensity of shock, the only difference being that one group had the power to stop it and the other did not. The eight dogs in the no-harness control group received no shocks at this stage of the experiment.

The subjects in the escape and no-escape groups received 64 shocks at about 90-second intervals. The escape group quickly learned to press the side panels and terminate the shocks (for themselves and for the no-escape group). Then, 24 hours later, all the dogs were tested in a shuttle box similar to the one described earlier. There were lights on either side of the box. When the lights were turned off on one side, an electrical current would pass through the floor of the box 10 seconds later. If a dog jumped the barrier within those 10 seconds, it escaped the shock completely. If not, it would continue to feel the shock until it jumped over the barrier or until 60 seconds of shock passed, at which time the shock was discontinued. Each dog was given 10 trials in the shuttle box.

Learning was measured by the following: (1) how much time it took, on average, from the time the light in the box went out until the dog jumped the barrier, and (2) the percentage of dogs in each group that failed entirely to learn to escape the shocks. Also, the dogs in the no-escape group received 10 additional trials in the shuttle box seven days later to assess the lasting effects of the experimental treatment.

RESULTS

In the escape group, the time it took for the dogs to press the panel and stop the shock quickly decreased over the 64 shocks. In the no-escape group, panel pressing completely stopped after 30 trials.

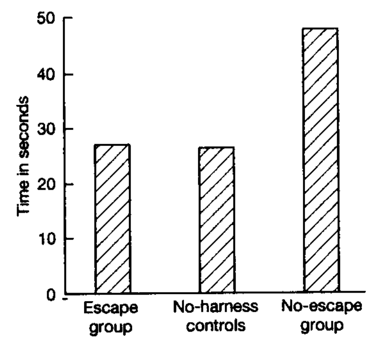

FIGURE 1 Average time to escape in shuttle box. (From p. 3.)

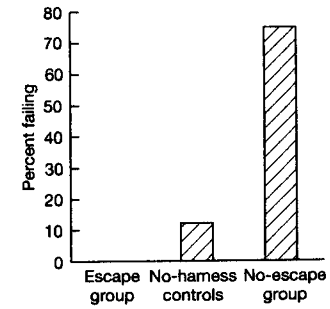

FIGURE 2 Percent of subjects failing to learn to escape shock in shuttle box. (From p. 3.)

Figure 1 shows the average time to escape for the three groups of subjects over all the trials in the shuttle box. Remember, this was the time between when the lights were turned off and when the animal jumped over the barrier. The difference between the no-escape group and the other two groups was statistically significant, but the small difference between the escape group and the no-harness group was insignificant. Figure 2 illustrates the percentage of subjects from each group that failed to jump over the barrier and escape the shock in the shuttle box in at least 9 of the 10 trials. This difference between the escape and no-escape groups was also highly significant. Six of the subjects in the no-escape group failed entirely to escape on either 9 or all 10 of the trials. Those six dogs were tested again in the shuttle box 7 days later. In this delayed test, five of the six failed to escape on every trial.

DISCUSSION

Because the only difference between the escape and the no-escape groups was the dogs' ability to actively terminate the shock, Seligman and Maier concluded that it must have been this control factor that accounted for the clear difference in the two groups' later learning to escape the shock in the shuttle box. In other words, the reason the escape group subjects performed normally in the shuttle box was that they had learned in the harness phase that their behavior was correlated with the termination of the shock. Therefore, they were motivated to jump the barrier and escape from the shock. For the no-escape group, the termination of shock in the harness was independent of their behavior. Thus, since they had no expectation that their behavior in the shuttle box would terminate the shock, they had no incentive to attempt to escape. They had, as Seligman and Maier had predicted, learned to be helpless.

Occasionally, a dog from the no-escape group made a successful escape in the shuttle box. Following this, however, it reverted to helplessness on the next trial. Seligman and Maier interpreted this to mean that the animal's previous ineffective behavior in the harness prevented the formation of a new behavior (jumping the barrier) to terminate shock in a new situation (the shuttle box), *even after a successful experience.*

In their article, Seligman and Maier reported the results of a subsequent experiment that offered some interesting additional findings. In this second study, dogs were first placed in the harness-escape condition where the panel press would terminate the shock. They were then switched to the no-escape harness condition before receiving 10 trials in the shuttle box. These subjects continued to attempt to panel press throughout all the trials in the no-escape harness and did not give up as quickly as did those in the first study. Moreover, they all successfully learned to escape and avoid shock in the shuttle box. This indicated that once the animals had learned that their behavior could be effective later experiences with failure were not adequate to extinguish their motivation to change their fate.

SUBSEQUENT RESEARCH

Of course, Seligman wanted to do what you are probably already doing in your mind: Apply these findings to humans. In later research, he asserted that the development of depression in humans involves processes similar to those of learned helplessness in animals. In both situations there is passivity, giving up and *just sitting there,* lack of aggression, slowness to learn that a certain behavior is successful, weight loss, and social withdrawal. Both the helpless dog and the depressed human have learned from specific past experiences that their actions are useless. The dog was unable to escape the shocks, no matter what it did, while the human had no control over events such as the death of a loved one, an abusive parent, the loss of a job, or a serious illness (Seligman, 1975).

The learned helplessness that leads to depression in humans can have serious consequences beyond the depression itself. Research has demonstrated that the elderly who, for various reasons such as nursing-home living, are forced to relinquish control over their daily activities have poorer health and a greater chance of dying sooner than those who are able to maintain a sense of personal power (for a discussion of related research by Langer and Rodin, see the reading on their nursing home study). In addition, several studies have demonstrated that uncontrollable stressful events can play a role in serious diseases such as cancer. One such study found an increased risk of cancer in individuals who in previous years had suffered the loss of a spouse, the loss of a profession, or the loss of prestige (Horn & Picard, 1979). In hospitals, patients are expected by the doctors and staff to be cooperative, quiet, and willing to place their fates in the hands of the medical authorities. Patients believe that they must follow doctors' and nurses' instructions without

question in order to recover as quickly as possible. A prominent health psychologist has suggested that being a *good hospital patient* implies that one must be passive and give up all expectations of control. This actually may create a condition of learned helplessness in the patients whereby they fail to exert control later when control is both possible and desirable for continued recovery (Taylor, 1979).

As further evidence of the learned helplessness effect, consider the following remarkable study by Finkelstein and Ramey (1977). Groups of human infants had rotating mobiles mounted over their cribs. One group of infants had special pressure-sensitive pillows so that by moving their heads, they could control the rotation of the mobile. Another group of infants had the same mobiles, but these were programmed to turn randomly without any control by the infants. After a two-week exposure to the mobiles for 10 minutes each day, the control-pillow group had become very skilled at moving their heads to make the mobiles turn. However, the most important finding came when the no-control group of infants was later given the same control pillows and an even greater amount of learning time than the first group. The infants failed entirely to learn to control the rotation of the mobiles. Their experience in the first situation had taught them that their behavior was ineffective, and this knowledge transferred to the new situation where control was possible. In terms of moving mobiles, the infants had learned to be helpless.

RECENT APPLICATIONS

Seligman's study of learned helplessness continues to influence current research and stimulate debate in many fields. His ideas dovetail with those of other researchers working to increase our understanding of the importance of personal control over events in our lives (such as Langer and Rodin's study on perceived control in nursing homes discussed in chapter 5).

One terribly timely example of this broad influence may be found even in research on the psychology of biological, chemical, and nuclear warfare. Stokes and Banderet (1997) applied Selignam's theory to reactions of military and nonmilitary individuals' experiences during World War I, the Gulf War in 1991, and a chemical terrorist attack in a Tokyo subway in 1995. The researchers found that people's sense of utter helplessness in the face of a biological, chemical, or nuclear warfare attack tends to produce underreactions (such as denial and doing nothing) or overreactions (such as blind panic), both of which are completely ineffective in the face of such dangers. The authors suggest the incorporation of proven psychological principles to enhance effectiveness in the training of military and law enforcement personnel for these potential threats.

Of course, you may now be thinking of how Seligman's theory relates to the aftermath of the terrorist attacks on the World Trade Center and Pentagon on September 11, 2001. Unfortunately, his theory is right on target. The psychological reverberations of that horrific event echoed across the United States and throughout the world. Symptoms included increased anxiety, anger, nervousness, increased alcohol use, feelings of a loss of control over external events, and helplessness (CDC, 2002). Indeed, one of the goals of terrorist attacks is to make people feel vulnerable and helpless. One clinical psychologist summarized the effects of the attack like this:

> The threat of terrorism creates the textbook psychological setup for anxiety and depression to occur. Psychologists call this "anticipatory anxiety"—waiting for the proverbial shoe to drop or, in this case, terrorist bomb to go off. Add the element of "learned helplessness"—the perception that there is nothing or very little you can do to stop the terrorism—and depression, vulnerability, and a profound sense of loss of control will develop. These are precisely the conditions to which we have all been exposed since the September 11 attacks. They define the "New Normalcy" and the "September 11 Syndrome." (Braiker, 2002)

CONCLUSION

We must return now to the issue of experimental ethics. Most of us have difficulty reading about animals, especially dogs, being subjected to painful shocks in a psychology laboratory. Over the years, strict standards have been developed to ensure that laboratory animals are treated humanely (see the discussion of these standards in the preface to this book). However, many, both within and outside the scientific professions, believe these standards to be inadequate. Some advocate the complete elimination of animal research in psychology, medicine, and all the sciences. Whatever your personal stand on this issue, the question you should be asking is this: Do the findings from the research extend our knowledge, reduce human suffering, and improve the quality of life, sufficiently to justify the methods used to carry out the study?

Ask yourself that question about this study by Seligman and Maier. This study found the beginnings of a theory to explain why some people become helpless, hopeless, and depressed. Seligman went on to develop a widely accepted model of the origins of and treatments for depression. Over the years his theory has been refined and detailed so that it applies more accurately to types of depression that occur under well-defined conditions, from the death of a loved one to massive natural and human-made disasters.

Through Seligman's research, for example, we now understand that individuals are most likely to become depressed if they attribute their lack of control to causes that are (1) permanent rather than temporary, (2) related to factors within their own personality (instead of situational factors), and (3) pervasive across many areas of their life (see Abramson, Seligman, & Teasdale, 1978). Through this understanding, therapists and counselors have become better able to diagnose, intervene in, and treat serious depression.

Does this body of knowledge justify the methods used in this early research on learned helplessness? Each person must decide that thorny issue for him- or herself.

Abramson, L., Seligman, M., & Teasdale, J. (1978). Learned helplessness in humans: Critique and reformulation. *Journal of Abnormal Psychology, 87,* 49–74.

Braiker, H. (2002). *The September 11 syndrome: A nation still on edge.* Retrieved September 15, 2003 from http://www.harrietbraiker.com/OpEd.htm.

CDC. (2002). Psychological and emotional effects of the September 11 attacks on the World Trade Center—Connecticut, New Jersey, and New York, 2001. *Centers for Disease Control and Prevention: Morbidity and Mortality Weekly Report, 51,* 784–786.

Finkelstein, N., & Ramey, C. (1977). Learning to control the environment in infancy. *Child Development, 48,* 806–819.

Horn, R., & Picard, R. (1979). Psychosocial risk factors for lung cancer. *Psychosomatic Medicine, 41,* 503–514.

Seligman, M. (1975). *Helplessness: On depression, development, and death.* San Francisco, CA: Freeman.

Stokes, J., & Banderet, L. (1997). Psychological aspects of chemical defense and warfare. *Military Psychology, 9*(4), 395–415.

Taylor, S. (1979). Hospital patient behavior: Reactance, helplessness, or control? *Journal of Social Issues, 35,* 156–184.