the difficulty of renting or selling space on the 13th floor. Another example is that Americans are so superstitious about $2 bills that the U.S. Treasury has a pile of 4 million of these bills that people refuse to use!

Are superstitions psychologically unhealthy? Most psychologists believe that even though superstitious behaviors, by definition, do not produce the consequences that you think they do, they can serve useful functions. Often such behaviors can produce a feeling of strength and control when a person is facing a difficult situation. It is interesting to note that people who are employed in dangerous occupations tend to have more superstitions than others. This feeling of increased power and control that is sometimes created by superstitious behavior can lead to reduced anxiety, greater confidence and assurance, and improved performance.

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SEE AGGRESSION . . . DO AGGRESSION!

Bandura, A., Ross, D., & Ross, S. A. (1961). Transmission of aggression through imitation of aggressive models. *Journal of Abnormal and Social Psychology, 63,* 575–582.

Aggression, in its overabundance of forms, is arguably the greatest social problem facing this country and the world today. Consequently, it is also one of the most heavily researched topics in the history of psychology. Over the years, the behavioral scientists who have been in the forefront of this research have been the social psychologists, whose focus is on human interaction. One goal of social psychologists has been to define aggression. This

may, at first glance, seem like a relatively easy goal, but such a definition turns out to be rather elusive. For example, which of the following behaviors would you define as aggression: A boxing match? A cat killing a mouse? A soldier shooting an enemy? Setting rat traps in your basement? A bullfight? The list of behaviors that may or may not be included in a definition of aggression goes on. As a result, if you were to consult ten different social psychologists, you would probably get ten different definitions of aggression.

Many researchers have gone beyond trying to agree on a definition to the more important process of examining the sources of human aggression. The question they pose is this: Why do people engage in acts of aggression? Throughout the history of psychology, many theoretical approaches have been proposed to explain the causes of aggression. Some of these contend that you are biologically preprogrammed for aggression, such that violent urges build up in you over time until they demand to be released. Other theories look to situational factors, such as repeated frustration, as the main determinants of aggressive responses. A third view, and one that may be the most widely accepted, is that aggression is learned.

One of the most famous and influential experiments ever conducted in the history of psychology demonstrated how children learn to be aggressive. This study, by Albert Bandura and his associates Dorothea Ross and Sheila Ross, was carried out in 1961 at Stanford University. Bandura is considered to be one of the founders of a school of psychological thought called "social learning theory." Social learning theorists believe that learning is the primary factor in the development of personality, and that this learning occurs through interactions with other people. For example, as you are growing up, important people such as your parents and teachers reinforce certain behaviors and ignore or punish others. Even beyond direct rewards and punishments, however, Bandura believed that behavior can be shaped in important ways through simply observing and imitating (or modeling) the behavior of others.

As you can see from the title of this chapter's study, Bandura, Ross, and Ross were able to demonstrate this modeling effect for acts of aggression. This research has come to be known throughout the field of psychology as "the Bobo doll study," for reasons that will become clear shortly. The article began with a reference to earlier research findings which demonstrated that children readily imitated the behavior of adult models while they were in the presence of the model. One of the things Bandura wanted to address in the new study was whether such imitative learning would generalize to settings in which the model was not with the child.

THEORETICAL PROPOSITIONS

The researchers proposed to expose children to adult models who behaved in either aggressive or non-aggressive ways. The children would then be tested in a new situation without the model present to determine to what extent they would imitate the acts of aggression they had observed in the

adult. Based on this experimental manipulation, Bandura and his associates made four predictions:

1. Subjects who observed adult models performing acts of aggression would imitate the adult and engage in similar aggressive behaviors, even if the model was no longer present. Furthermore, this behavior would differ significantly from subjects who observed non-aggressive models or no models at all.
2. Children who were exposed to the non-aggressive models would not only be less aggressive than those who observed the aggression, but also significantly less aggressive than a control group of children who were exposed to no model at all. In other words, the non-aggressive models would have an aggression-inhibiting effect.
3. Because children tend to identify with parents and other adults of their same sex, subjects would "imitate the behavior of the same-sex model to a greater degree than a model of the opposite sex" (p. 575).
4. "Since aggression is a highly masculine-typed behavior in society, boys should be more predisposed than girls toward imitating aggression, the difference being most marked for subjects exposed to the male model" (p. 575).

METHOD

This article outlined the methods used in the experiment with great organization and clarity. Although somewhat summarized and simplified, these methodological steps are presented here.

Subjects

The researchers enlisted the help of the director and head teacher of the Stanford University Nursery School in order to obtain subjects for their study. Thirty-six boys and 36 girls, ranging in age from 3 years to almost 6 years, participated in the study as subjects. The average age of the children was 4 years and 4 months.

Experimental Conditions

Twenty-four children were assigned to the control group, which meant that they would not be exposed to any model. The remaining 48 subjects were first divided into two groups: one exposed to aggressive models and the other exposed to non-aggressive models. These groups were divided again into male and female subjects. Finally, each of these groups were divided so that half of the subjects were exposed to same-sex models and half to opposite-sex models. This created a total of eight experimental groups and one control group. A question you might be asking yourself is this: What if the children in some of the groups are already more aggressive than others? Bandura guarded against this potential problem by obtaining ratings

of each subject's level of aggressiveness. The children were rated by an experimenter and a teacher (both of whom knew the children well) on their levels of physical aggression, verbal aggression, and aggression toward objects. These ratings allowed the researchers to match all the groups in terms of average aggression level.

The Experimental Procedure

Each child was exposed individually to the various experimental procedures. First, the experimenter brought the child to the playroom. On the way, they encountered the adult model who was invited by the experimenter to come and "join in the game." The child was seated in one corner of the playroom at a table containing highly interesting activities. There were potato prints (this was 1961, so for those of you who have grown up in the high-tech age, a potato print is a potato cut in half and carved so that, like a rubber stamp, it will reproduce geometric shapes when inked on a stamp pad), and stickers of brightly colored animals and flowers that could be pasted onto a poster. Next, the adult model was taken to a table in a different corner containing a tinker toy set, a mallet, and an inflated Bobo doll 5 feet tall. The experimenter explained that these toys were for the model to play with and then left the room.

For both the aggressive and non-aggressive conditions, the model began assembling the tinker toys. However, in the aggressive condition, after a minute, the model attacked the Bobo doll with violence. For all the subjects in the aggressive condition, the sequence of aggressive acts performed by the model was identical:

> The model laid Bobo on its side, sat on it, and punched it repeatedly in the nose. The model then raised the Bobo doll, picked up the mallet, and struck the doll on the head. Following the mallet aggression, the model tossed the doll up in the air aggressively, and kicked it about the room. This sequence of physically aggressive acts was repeated three times, interspersed with verbally aggressive responses such as, "Sock him in the nose . . . ," "Hit him down . . . ," "Throw him in the air . . . ," "Kick him . . . ," "Pow . . . ," and two non-aggressive comments, "He keeps coming back for more" and "He sure is a tough fella." (p. 576)

All this took about 10 minutes, after which the experimenter came back into the room, said goodbye to the model, and took the child to another game room.

In the non-aggressive condition, the model simply played quietly with the tinker toys for the 10-minute period and completely ignored the Bobo doll. Bandura and his collaborators were careful to ensure that all experimental factors were identical for all the subjects except for the factors being studied: the aggressive vs. non-aggressive model, and the sex of the model.

Arousal of Anger or Frustration

Following the 10-minute play period, all subjects from the various conditions were taken to another room that contained very attractive toys, such as a fire engine, a jet fighter, a complete doll set including wardrobe, a doll carriage, and so on. The researchers believed that in order to test the subjects for aggressive responses, the children should be somewhat angered or frustrated, which would make such behaviors more likely to occur. To accomplish this, they allowed the subjects to begin playing with the attractive toys, but after a short time told them that the toys in this room were reserved for the other children. The subjects were also told, however, that they could play with some other toys in the next room.

Test for Imitation of Aggression

The final experimental room was filled with both aggressive and non-aggressive toys. Aggressive toys included a Bobo doll (of course!), a mallet, two dart guns, and a tether ball with a face painted on it. The non-aggressive toys included a tea set, crayons and paper, a ball, two dolls, cars and trucks, and plastic farm animals. Each subject was allowed to play in this room for 20 minutes. During this period, judges behind a one-way mirror rated each child's behavior on several measures of aggression.

Measures of Aggression

A total of eight different responses were measured in the subjects' behavior. In the interest of clarity, only the four most revealing measures will be summarized here. First, all acts that imitated the physical aggression of the model were recorded. These included sitting on Bobo, punching it in the nose, hitting it with the mallet, kicking it, and throwing it into the air. Second, imitation of the models' verbal aggression was measured by counting the subjects' repetition of the phrases, "Sock him," "Hit him down," "Pow," etc. Third, other mallet aggression (that is, hitting objects other than the doll with the mallet) were recorded. Fourth, non-imitative aggression was documented by tabulating all subjects' acts of physical and verbal aggression that had not been performed by the adult model.

RESULTS

The findings from these observations are summarized in Table 1. If you examine the results carefully, you will discover that three of the four hypotheses presented by Bandura, Ross, and Ross in the introduction were supported.

The children who were exposed to the violent models tended to imitate the exact violent behaviors they observed. There were an average of 38.2 instances of imitative physical aggression for each of the male subjects, and 12.7 for the female subjects who had been exposed to the aggressive models. Additionally, the models' verbally aggressive behaviors

TABLE 1 Average Number of Aggressive Responses from Children in Various Treatment Conditions

	TYPE OF MODEL				
TYPE OF AGGRESSION	AGGRESSIVE MALE	NON-AGGRESSIVE MALE	AGGRESSIVE FEMALE	NON-AGGRESSIVE FEMALE	CONTROL GROUP
Imitative Physical Aggression					
Boys	25.8	1.5	12.4	0.2	1.2
Girls	7.2	0.0	5.5	2.5	2.0
Imitative Verbal Aggression					
Boys	12.7	0.0	4.3	1.1	1.7
Girls	2.0	0.0	13.7	0.3	0.7
Mallet Aggression					
Boys	28.8	6.7	15.5	18.7	13.5
Girls	18.7	0.5	17.2	0.5	13.1
Non-Imitative Aggression					
Boys	36.7	22.3	16.2	26.1	24.6
Girls	8.4	1.4	21.3	7.2	6.1

(adapted from p. 579)

were imitated an average of 17 times by the boys and 15.7 times by the girls. These specific acts of physical and verbal aggression were virtually never observed in the subjects exposed to the non-aggressive models or in the control subjects who were not exposed to any model.

As you will recall, Bandura and his associates predicted that non-aggressive models would have a violence-inhibiting effect on the children. In order for this hypothesis to be supported, the results should show that the subjects in the non-aggressive conditions averaged significantly fewer instances of violence than those in the no-model control group. In Table 1, if you compare the non-aggressive model columns with the control group averages, you'll see that the findings were mixed. For example, boys and girls who observed the non-aggressive male exhibited far less non-imitative mallet aggression than controls, but boys who observed the non-aggressive female aggressed more with the mallet than did the boys in the control group. As the authors readily admit, these results were so inconsistent in relation to the aggression-inhibiting effect of non-aggressive models that they were inconclusive.

The predicted gender differences, however, were strongly supported by the data in Table 1. Clearly, boys' violent behavior was influenced more by the aggressive male model than by the aggressive female model. The average total number of aggressive behaviors by boys was 104 when they had observed a male aggressive model, compared with 48.4 when a female model had been observed. Girls, on the other hand, while their scores were less consistent, averaged 57.7 violent behaviors in the aggressive female model condition, compared with 36.3 when they observed the male model. The authors point out that in same-sex aggressive conditions, girls were more likely to imitate verbal aggression while boys were more inclined to imitate physical violence.

Finally, boys were significantly more physically aggressive than girls in nearly all the conditions. If all the instances of aggression in Table 1 are tallied, there were 270 violent acts by the boys, compared with 128.3 by the girls.

DISCUSSION

Bandura, Ross, and Ross claimed that they had demonstrated how specific behaviors, in this case violent ones, could be learned through the process of observation and imitation without any reinforcement provided to either the models or the observers. They concluded that children's observation of adults engaging in these behaviors sends a message to the child that this form of violence is permissible, thus weakening the child's inhibitions against aggression. The consequence of this observed violence, they contended, is an increased probability that a child will respond to future frustrations with aggressive behavior.

The researchers also addressed the issue of why the influence of the male aggressive model on the boys was so much stronger than the female aggressive model was on the girls. They explained that in our culture, as in most, aggression is seen as more typical of males than females. In other words, it is a masculine-typed behavior. So, a man's modeling of aggression carried with it the weight of social acceptability and was, therefore, more powerful in its ability to influence the observer.

SUBSEQUENT RESEARCH

At the time this experiment was conducted, the researchers probably had no idea how influential it would become. By the early 1960s, television had grown into a powerful force in American culture and consumers were becoming concerned about the effect of televised violence on children. This has been and continues to be hotly debated. In the past 30 years, there have been no less than three congressional hearings on the subject of television violence, and the work of Bandura and other psychologists has been included in these investigations.

These same three researchers conducted a follow-up study two years later that was intended to examine the power of aggressive models who are on film, or who are not even real people. Using a similar experimental method involving aggression toward a Bobo doll, Bandura, Ross, and Ross designed an experiment to compare the influence of a live adult model with the same model on film and to a cartoon version of the same aggressive modeling. The results demonstrated that the live adult model had a stronger influence than the filmed adult, who, in turn, was more influential than the cartoon. However, all three forms of aggressive models produced significantly more violent behaviors in the children than was observed in children exposed to non-aggressive models or control subjects (Bandura, Ross, & Ross, 1963).

On an optimistic note, Bandura found in a later study that the effect of modeled violence could be altered under certain conditions. You will recall that in his original study, no rewards were given for aggression to either the models or the subjects. But what do you suppose would happen if the model behaved violently and was then either reinforced or punished for the behavior while the child was observing? Bandura (1965) tested this idea and found that children imitated the violence more when they saw it rewarded, but significantly less when the model was punished for aggressive behavior.

Critics of Bandura's research on aggression have pointed out that aggressing toward an inflated doll is not the same as attacking another person, and that children know the difference. Building on the foundation laid by Bandura and his colleagues, other researchers have examined the effect of modeled violence on real aggression. In a study using Bandura's Bobo doll method (Hanratty, O'Neil, & Sulzer, 1972), children observed a violent adult model and were then exposed to high levels of frustration. When this occurred, they often aggressed against a live person (dressed like a clown), whether that person was the source of the frustration or not.

Another study randomly assigned children to two groups. One group watched a portion of a television show ("The Untouchables") that contained violence such as shootings, knifings, and fights, while the other group saw an exciting sports show. Other than the difference in program viewing content, the two groups were treated exactly the same. Later, the children from both groups were given the opportunity to aggress toward another child by pressing a button marked "hurt" (the button wasn't really connected to anything, of course). Those who had been exposed to the violent program were more likely to press the button and hold it down longer than those who viewed the sports (Liebert & Baron, 1972).

CONCLUSIONS AND RECENT APPLICATIONS

The research by Bandura, Ross, and Ross discussed in this chapter made two crucial contributions to psychological thought. First, it demonstrated quite dramatically how children can acquire new behaviors simply by observing adults. Social learning theorists believe that much, if not most, of human personality is formed through this modeling process. Second, this research laid the groundwork for decades of research and dozens of studies on the effects on children of viewing violence in person or in the media.

Within the past few years, there have been new congressional hearings on media violence. Broadcasters, feeling increased pressure to respond to public opinion, have voluntarily begun to reduce violent programming, add "viewer advisories" when a program is particularly violent, and have developed a new rating system to inform viewers about a show's content. However, the controversy continues. Not all researchers agree that there is a significant causal link between televised violence and real-life aggression (see Lande, 1993, for a recent review of this literature).

Other applications of Bandura's early studies examine how modeling can effect children's behavior in areas other than aggression. For example, using Bandura's findings that children tend to be influenced more by same-sex models, a study by Steinke and Long (1996) analyzed children's science programs on television. They found that, "over twice as many male characters as female characters and twice as many male scientists and female scientists were shown in these series. Females were most often seen as pupils or apprentices, laboratory assistants, or science reporters, and less often as expert scientists. Of the 86 females appearing in these programs, 68 were portrayed in secondary roles . . ." (p. 91). These findings make it easy to see how modeled influences that often go unnoticed can perpetuate our cultural gender stereotypes.

Finally, on a more positive note, Bandura's research on modeled violence was cited in an article that reviewed programs designed to reduce violence in schools (Johnson & Johnson, 1996). These authors reported that when students are trained in conflict-resolution and peer mediation strategies, they are able to incorporate these methods when conflicts arise and arrive at constructive outcomes. Moreover, as other students begin to model the behavior of their trained peers, fewer conflicts occur, the number of conflicts referred to teachers decreases, and the number of suspensions for violent behavior drops.

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