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I grew up, intellectually that is, in social psychology. I was one of those students who had the good fortune to get involved in research very early in my academic career. I would like to think that it was good foresight on my part that led me to get involved in research, but I have to confess that my good fortune was largely due to being in the right place at the right time. The right place was a course taught by Roy Malpass at the State University of New York–Plattsburgh. The right time was when I was a somewhat confused, extremely bored, but highly motivated freshman. What I could not have foreseen at that time was how important my decision to get involved in research was. It has affected virtually every aspect of my life.
GETTING HOOKED

When I first got involved in research, I had no idea what to expect. What I did know was that despite the fact that I was doing well in my classes, I was bored. I already knew how to “do school.” That is, I knew how to read and study my text and class notes to prepare for exams, and I knew how to write papers for classes. This isn’t to say that my classes weren’t good or challenging, but simply that I wanted something more. When Roy Malpass first asked me if I wanted to get involved in research, I was hesitant. However, I figured that I might as well give it a try and see what it was all about.

The first research project I worked on was designed to determine which factors affect an eyewitness’s decision either to identify someone from a lineup as the guilty party or to decide that the person who committed the crime is absent from the lineup. The problem was clearly important. We were interested in how the instructions given to eyewitnesses affect whether they will identify someone in the lineup as the criminal. We looked at two different types of instructions. The first we labeled “biased instructions” because the way they were phrased presumed that the guilty person was actually in the lineup. These instructions told the eyewitness to look over the lineup and choose the person who committed the crime. Think about real lineup situations. Is it the case that the guilty person is always present in lineups? Surely not. The lineup procedure is part of the investigation to determine if the person the police suspect is guilty is indeed the criminal. If the police already knew that the person they suspected was guilty, there would be no need for a lineup. How would such biased lineup instructions, which we found were used in many real police lineup procedures, affect a witness’s willingness to make an identification?

To find out, we compared biased instructions with “unbiased instructions.” The unbiased instructions allowed for the possibility that the guilty person was not in the lineup. Specifically, they told the eyewitness to look over the lineup and decide whether the person who committed the crime was there. If he was in the lineup, the eyewitness was to identify him; if he was not, the eyewitness was instructed not to identify anyone. Would the unbiased instructions be fairer? How could one know?

We decided that it was extremely important to see how the instructions affected eyewitnesses’ decisions under two different conditions: when the criminal was present in the lineup and when he was absent from the lineup. At the time we did this study (the late 1970s), most of the research had examined only situations in which the criminal was present in the lineup. This type of situation did not enable the researchers to see what would happen in perhaps the most important situation: when the criminal was absent from the lineup. The last thing the criminal jus-
tice system wants to do is prosecute and convict innocent people. Thus, it is crucial to examine how eyewitnesses respond to lineups in which the criminal is absent.

Therefore, we set up an experimental situation that provided an opportunity to examine how eyewitnesses behave in all possible combinations of the two variables of interest: instruction type (biased versus unbiased) and lineup type (criminal present versus criminal absent). While deciding that these were the variables we wanted to examine, we had designed an experiment. I thought that this was a really interesting way to go about learning the answers to the questions we had. We could set up the conditions of interest and then see how eyewitnesses behaved in those conditions. This was only part of the story, however. We needed a crime. We wanted a crime that many people could witness simultaneously and one that would appear realistic to our prospective eyewitnesses. This was a really exciting part of the research.

We decided on a vandalism that would occur in the course of a large lecture demonstration. To pull this off, we needed the cooperation of many people: Henry Morlock of SUNY-Plattsburgh, who gave the lecture demonstration; a young man, Tim Varano, who was our vandal; a young woman who would jump up and volunteer to call the police; police officers who would come to take statements at the scene of the crime; several young men to be lineup participants; and several other student volunteers who helped coordinate the activities during the lecture demonstration and vandalism. Having cast the principals in our drama, we needed a compelling script—the crime had to be believable. The vandal would destroy some expensive electronic equipment after an argument with the professor. We had to have a realistic escape route for the vandal after the crime, lest he be detained by an energetic eyewitness. We had to anticipate every way that things could go wrong and try to plan options for each possibility. Lines had to be learned. Places had to be marked on the stage. We had to rehearse and rehearse and rehearse. Every detail had to be planned, timed, and executed perfectly or the whole experiment would be ruined and we would not be able to find the answers to our questions.

Scene 1: The Crime

The script went as follows. About 350 students filed into a large lecture hall for a demonstration on biofeedback techniques that was to begin at 7 P.M. When the lecture started, the professor asked for some volunteers who would agree to be hooked up to biofeedback apparatus and participate in the demonstration. Three students volunteered. All were accomplices of the experimenters, called confederates. One of the confederates was the vandal. During the demonstration, a young woman
was hooked up to the biofeedback apparatus and a television monitor displayed her image so that students sitting in the back of the room could see where electrodes were placed and follow the demonstration. The other confederates waited for their turn to be hooked up to the apparatus. While the professor explained the principles of biofeedback, the television image became fuzzy. Before the professor noticed and could attempt to bring the image back, the vandal began to play with dials on the monitor. When the professor noticed, he quickly admonished the young man and began to work on the monitor. After successfully regaining the television image, the professor sternly reprimanded the young man and asked him to refrain from touching the expensive, well-calibrated equipment. The vandal retorted that he was just trying to help, and that elicited another stern reproach from the professor. Their discussion escalated into a rather heated argument, obscenities were yelled, and the vandal pulled the rack with the television monitor and electronic apparatus to the floor, shattering the monitor and damaging the apparatus. The vandal quickly ran out a front door of the lecture room (and back to the safety of our research lab). An audible gasp was heard from the audience, followed by a moment of shocked silence and then a buzz of discussion: “I can’t believe that happened.” “Who was that guy?” “Did you get a good look?” “What a jerk!” “I’ll call the police.”

Scene 2: The Aftermath

It worked! The crime and the escape were a success. The students believed that the crime was real. But the drama was not over yet. The professor looked visibly upset and justifiably concerned over his destroyed equipment. Some fifteen to twenty minutes later the police arrived and distributed forms that asked for descriptions of the person who destroyed the equipment. After the police collected the information sheets, the researchers entered stage left. At this point the students were told that the crime had been staged for the purpose of doing research. They were told why we had staged the crime and were invited to come to our research lab and view a lineup during one of the following three nights. Many were shocked because it had seemed so real. How weird, others thought. Why would someone go to all the trouble to stage a crime and set up lineups? When the curtain closed on scene 2, we were exhausted. We had invested so much hard work and so much emotional energy. I had never worked so hard in my entire life. And still we did not have answers to our questions about the effects of instruction type and lineup type on how eyewitnesses respond. Now the crime was over, and the data collection would begin the following evening.
Scene 3: The Lineups

During the next three nights between 7 and 10 P.M., students who had witnessed the criminal event showed up at our research lab to view a lineup. As with the crime and the aftermath, every detail had to be planned perfectly. It was very important that every eyewitness be treated exactly the same way. The only thing that differed for the eyewitnesses was whether they received biased versus unbiased instructions and whether they viewed a vandal-present versus a vandal-absent lineup. Everything else was identical (the way the eyewitness was greeted, the demeanor of the experimenter, the lighting condition for the lineup, the behavior of the lineup participants). To the extent that anything except our key variables differed across the eyewitnesses, we would not be able to determine the effect of these variables (instruction type and lineup type). The goal of an experiment is to isolate and vary only the key variables of interest. If this part of the experiment was not executed with the same precision as the early phases of the research, the whole experiment could be ruined. Thus, our script for the lineup was executed over and over as the eyewitnesses showed up to view the lineup.

After randomly assigning each eyewitness to one of the four experimental conditions, the experimenter followed a carefully planned script in which he gave the eyewitnesses the appropriate instruction and escorted them to a one-way glass through which they could observe the appropriate lineup. For each eyewitness, we recorded whether he or she made an identification (chose one of the lineup participants as the vandal) and whether his or her decision was correct or incorrect.

Epilogue: The Results

When all was said and done, 100 student-eyewitnesses had come to the lab to view the lineup. Now we could get down to finding the answers to our questions. Did the type of instruction given to eyewitnesses affect the rate of making an identification? Did the presence or absence of the offender make any difference? The answer to both questions is yes. But perhaps most important, we can see the most dramatic effects of these variables when they are considered together. When the vandal was present in the lineup, the type of instruction given to eyewitnesses didn’t make much of a difference in choosing rates (100 percent for the biased and 83 percent for the unbiased). Keep in mind at this point, however, that we also have to consider the types of mistakes people make. I’ll return to this when we examine the error data. Let’s look at what happened when the vandal was absent from the lineup. When the instructions were biased, 78 percent of the eyewitnesses selected someone as the vandal; when the instructions were unbiased, only 33 percent of the eyewitnesses made an identification.
This is a huge difference, particularly when we consider that any choice made when the vandal is absent is an incorrect identification of an innocent person. Eyewitnesses are much less likely to incriminate an innocent person in vandal-absent lineups when the instructions are unbiased compared to when they are biased and imply that a guilty person is present. When the vandal was present in the lineup, people were pretty good at identifying him, but eyewitnesses in this experiment made different types of identification errors depending on which instructions they were given. The biased-instruction, vandal-present condition had a 25 percent error rate—all misidentifications of an innocent person. In contrast, the 17 percent errors in the unbiased-instructions, vandal-present condition were all failures to identify anybody (i.e., the 83 percent who made an identification chose the guilty person). We believe that the latter error (missing the guilty person when he is present in the lineup), although a serious error, is less serious than wrongfully incriminating an innocent person.

Thus, we had answers to our questions about the effects of instruction type and lineup type on choosing and error rates among eyewitnesses. Unbiased lineup instructions may reduce the overall number of errors that are made and may lead to less serious errors compared with biased lineup instructions. We were very excited by these data and thought that they might be useful in the criminal justice system. We were eager to communicate our findings to those who could put them to the best use. However, it occurred to us, as I’m sure it has occurred to you, that as nice as this experiment was, there was one important limitation: The eyewitnesses knew they were participating in an experiment. Maybe laboratory subject eyewitnesses behave differently from real eyewitnesses to a criminal event. After all, there’s more at stake for real eyewitnesses. Their decisions matter and can affect the course of a criminal investigation and the fate of another person. Also, identifying a suspect commits eyewitnesses to possibly testifying at a trial. These are only some of the possible consequences that can affect the decision of a real eyewitness. The important point is that the first experiment provided us with some useful information, but perhaps more important, it encouraged us to ask new questions which we would explore in subsequent studies.

Participating in that first study was a significant event. I was hooked. We had labored to create an experimental situation that would enable us to test our ideas, and once we had followed it through, we found that all the effort had been worthwhile. We had not only answers but also new questions. This research had everything. It dealt with important issues, was interesting, required creative problem solving, and had the potential for application. Most interesting and somewhat surprising to me, it was fun. In fact, I’ve been asking questions and designing experiments ever since. Getting involved in research helped solidify my decision to major in psychology and helped me decide that I wanted to pursue a Ph.D. in
social psychology and continue to do research throughout my career. I had no idea when I was an undergraduate that I would end up doing research on prejudice and intergroup tension. Although one obviously needs to work on the problems he or she finds most fascinating, it was not a topic area that drew me to research but rather the *process* of doing research.

**THE PROCESS OF DOING RESEARCH**

Throughout my undergraduate and graduate school days I had the good fortune to study with a number of outstanding social psychologists, including Roy Malpass, Tom Ostrom, Tony Greenwald, and Gifford Weary. Each of these people contributed greatly to the way I think about doing research. When I was a graduate student at Ohio State University, Tony Greenwald shared with us a general framework for thinking about research. Over the years I have found this framework invaluable, and I would like to share it with you. Tony suggested that one could think about research in terms of the "three worlds of science" and the "four phases of scientific activity." The three worlds are the *real world* (the everyday world people live in), the *theory world* (the world of ideas and hypotheses), and the *research world* (the world where researchers conduct research). As can be seen in Figure 10.1, the four phases of scientific activity bridge the three worlds of science. I will take you through the three worlds of science and four phases of scientific activity in terms of the research on eyewitness identification discussed earlier in this chapter, but the ideas are relevant to any research area. This framework simply provides a broad overview of what's involved in doing research, but in my opinion, it is the process of going through these phases that is exciting, rewarding, and fun.

![Diagram of the process of doing research](image)

**FIGURE 10.1**
A framework for the process of doing research (cf. Anthony Greenwald). The three worlds of science and the four phases of scientific activity.
Phase 1: Moving from General Questions to Specific Hypotheses

Many research ideas come from observations people make of things that happen in the real world. For example, our concern over the nature of lineup instructions given to eyewitnesses and our studies of the effect of varying the presence of the criminal in a lineup came from looking at how lineups are conducted in the real world. We didn’t stop with our observations and interpretations of the real-world events, however. We also looked to see what the research literature had to contribute to our thinking about these issues. This is phase 1 of scientific activity. The activities of phase 1 serve to connect the real world with the theory world. In the theory world, we formulate our best guesses or hypotheses about the relationships between variables. In our specific example, we were interested in the relationship between the variables we could control (instruction type and lineup type) and the outcome or consequence variables (choosing rates and error rates). We hypothesized, for example, that biased lineup instructions would lead to high choosing rates whether the vandal was present in or absent from the lineup. Moreover, we hypothesized that unbiased instructions would lead to more caution in identifying anyone, especially when the vandal was absent from the lineup. Thus, in the theory world one lays out one’s hypotheses and the logic underlying them as completely as possible. Doing this prepares a researcher to move into the activities of phase 2, in which abstract theoretical ideas are translated into the concrete manipulations and measures that make up the experiment.

Phase 2: Designing Experiments and Collecting Data

It’s in phase 2 activities that the actual experiment takes shape. We decide exactly how we will manipulate and measure the key variables. In our experiment, in operationalizing instruction type, we had to determine precisely how the biased and unbiased instructions would be phrased. Lineup type was easy to operationalize (finding six possible lineup participants who were similar in appearance proved to be rather difficult). In vandal-present lineups, the vandal was among the lineup participants; in vandal-absent lineups, the vandal’s place in the lineup was taken by an alternate. We also had to operationalize our key outcome variables in terms of concrete measures. Choosing rate was defined as whether eyewitnesses made an identification. Error rate was defined as whether they made an incorrect decision (chose the wrong person or failed to identify the vandal when he was present). Part of the phase 2 activities also included setting up the procedure for the experiment, detailing what would happen at every point. For us, this was the script
for the crime and the script for the lineups. After operationalizing our variables and preparing our script, we were ready to collect the data. Specifically, we had the eyewitnesses look at our lineups and make their identification decisions.

**Scripting the drama.** In describing the eyewitness identification study, I characterized our script in terms of a drama or play, referring to the major parts of the study in terms of scenes. This is one of the aspects of doing research that I enjoy most. In much of my work I have had to create dramas in which the subjects are the only naive actors. Everyone else’s lines are scripted, and the timing of behaviors is carefully planned and well rehearsed. In essence, each subject determines the end of the play or drama by virtue of how he or she responds to the situation. This aspect of the research provides some of the greatest opportunities for excitement, creativity, and fun. The researcher takes on the role of scriptwriter, stage manager, set and costume designer, and director. Some of the fun in research lies in scripting the drama, for it is here that one sees one’s theoretical ideas take shape in the form of manipulations (independent variables), measures (dependent variables), and procedures. In addition, curiosity about how each drama will end (i.e., how subjects will respond in the situation) is part of what contributes to the excitement of doing a study.

Some studies require more elaborate types of scripts, while others require less elaborate scripts. However, in every study the script has to be very well planned and carefully executed. The goal is to create experimental situations that have what Eliot Aronson refers to in his book *The Social Animal* as “experimental realism”: The experimental situation should have an impact on the subjects so that they are involved in the situation and take it seriously. This is very much different from what Aronson has termed “mundane realism,” which refers to how similar the laboratory experiment is to events that frequently happen to people in the outside world. It is important to recognize that an experiment does not have to be high in mundane realism to be good. All experiments, however, should be high in experimental realism. If subjects do not take their tasks seriously and are not involved in the tasks, the results are not likely to be valid or reliable.

**Phase 3: Evaluating Results against Hypotheses**

Once the data have been collected, they have to be analyzed and the researcher has to determine if the findings support or challenge the hypotheses. These are the activities of phase 3. This is one of the most nerve-racking aspects of doing research, as you wait anxiously to find out whether your ideas are supported. When the findings support the
hypotheses, the researcher has at least two choices. First, the researcher can determine the next important question and cycle back to the theory world and to phase 2. With a new hypothesis to test, the researcher designs a new study and collects new data. Back to phase 3. This is exactly what we did when we decided that we needed to create a lineup situation in which the subjects believed that the crime was real and that their decisions would have real consequences. In fact, we cycled between phases 2 and 3 often as we developed a full program of research on factors that affect eyewitnesses’s lineup decisions. Second, if the researcher has real confidence about the findings, he or she can move on to phase 4 activities and apply the findings from the research to the real world (see below).

When the results of a study are inconsistent with the researcher’s hypotheses, the researcher is placed in somewhat of a quandary and must take on a new role—that of a detective. The researcher looks for clues concerning what went wrong in the study and decides what steps to take to remedy those problems. The detective has to consider carefully a number of possibilities. First, it is possible that the hypothesis is incorrect. Alternatively, it is possible that the hypothesis is correct but that the variables investigated in the study were not operationalized effectively (the manipulations and measures need to be fine-tuned) and the procedure needs to be revised (the drama was not well scripted). To avoid this problem, researchers often go through painstaking pretesting to ensure that before they conduct their studies, they have developed good manipulations, measures, and procedures. Whichever possibility is determined to be the source of the difficulty, the detective/researcher returns to the theory world and phase 2 activities in his or her quest to understand the phenomenon of interest. Concluding that one’s hypothesis is incorrect can be disappointing as well as threatening, but it can also lead to new discoveries.

Just when you thought you failed . . . surprising results, important discoveries. To provide you with a feel for the situation of confronting findings that fail to support your hypotheses, I want to leave the eyewitness research for a bit and tell you about my experiences with my dissertation research. First, some background information is in order. I was very much interested in studying the relationship between stereotypes and prejudice. My dissertation research concerned prejudice toward blacks. It seemed to me that a primary difference between low- and high-prejudice people is that whereas high-prejudice people believe in the stereotype (that blacks are lazy and criminals), low-prejudice people believe that the stereotype is wrong.

Thus, it seemed reasonable to me that low-prejudice people would be less likely to use the stereotype in making judgments about blacks. At the time when I was developing my hypotheses and designing my studies, priming techniques were becoming very popular as a way to activate
cognitive structures and examine the effects of such activation on social judgments. Priming simply means presenting people with information that brings a whole set of ideas and memories to mind before having them work on related tasks. It occurred to me that this would be an effective way to show the differences between low- and high-prejudice people. I could present stereotype-related words (e.g., primes such as lazy, Afro, musical, and poor) to low- and high-prejudice people and then give them a social judgment task, a judgment task that should be affected by the stereotype. The idea was that priming stereotype-related information should lead to stereotype-congruent judgments for high-prejudice people but not for low-prejudice people. Because low-prejudice people do not believe in the stereotype, they should not make stereotype-congruent social judgments.

Whenever one does research on prejudice, social desirability concerns have to be considered. In scripting one's procedures, it is important to set up the situation so that it is unlikely that subjects will try to please the experimenter by giving "socially desirable" responses. Cognitive psychologists have developed priming techniques that have enabled researchers to present primes below the level of conscious awareness. This is achieved by presenting the priming words extremely rapidly (e.g., for just 80 milliseconds) and outside the central field of vision. Thus, although the stimuli can be detected (i.e., the subject sees the images), they cannot be recognized. I thought that this would be a perfect strategy for avoiding social desirability concerns. I could present very few stereotype-related primes (low stereotype priming) or a large number of stereotype-related primes (high stereotype priming) to both low- and high-prejudice subjects. These were my key manipulations. My central dependent measure was designed so that if the stereotype was affecting subjects' judgments, the subjects would make extreme ratings on an impression scale. It is well known that hostility is part of the stereotype of blacks. Therefore, after the priming task, subjects read a paragraph about a stimulus person named Donald who engaged in a number of ambiguously hostile behaviors. These behaviors (e.g., refusing to pay rent until his apartment was repainted) were likely to be interpreted as hostile only if the concept of hostility had previously been primed. Because hostility is part of the stereotype, when the stereotype is primed, these behaviors should be interpreted as higher in hostility than is the case when the stereotype is not primed.

I predicted that in the low-stereotype-priming condition, ratings on the impression scale would not be extreme and there would not be a difference in the ratings of low- and high-prejudice subjects. However, in the high-stereotype-priming condition, I thought that there would be a difference between the impression ratings of the low- and high-prejudice subjects. Specifically, I predicted that high-prejudice subjects would be strongly affected by the priming and that their impression ratings would
be extreme (they would rate Donald as very hostile). In contrast, because low-prejudice people don’t believe in the stereotype, I thought that they would not be affected by the priming and that their ratings would not be extreme (Donald would not be rated as hostile).

In this study I measured prejudice in a very straightforward fashion. A few weeks before participating, prospective subjects filled out a standard attitude questionnaire called the Modern Racism Scale that measured their attitudes toward blacks. This scale, which was developed by John McConahay, is designed to detect even subtle prejudice toward blacks and has been demonstrated to be both valid and reliable. Using this scale, we were able to identify high-prejudice (scored in the upper quartile of the scale) and low-prejudice (scored in the lower quartile of the scale) people. Once identified, these people were invited to participate in the study and were randomly assigned to the low- and high-stereotype-priming conditions. After collecting my data and analyzing the results, I was dumbfounded. I was wrong! Both low- and high-prejudice people were similarly affected by the stereotype priming. High levels of stereotype priming led to extreme ratings on the impression scale for both high- and low-prejudice people.

At first I was incredibly disappointed. I felt stupid. I felt threatened. This was my first truly independent research project. I had had some wonderfully successful experiences working with others, but now, on my own, I had failed. I briefly entertained thoughts that I was not good at research and couldn’t design a good study. But I realized that I had enough experience with research to know that things don’t always work out the way one wants them to and that this is part of science and the process of discovery. So I got into the detective mode. What had gone wrong? I spent a great deal of time staring at the graph of the actual results. I puzzled over them. I checked my data coding to see if I had made an error there. I hadn’t. I thought about the procedure and whether it was appropriate for testing the hypothesis. I decided that it was. I thought about the measures and whether they were good. I decided that they were. So I was left with these data, and I had decided that they were valid. Therefore, it was these data that needed to be explained. This was a frustrating process. It took a while, but finally I had an “Aha!” experience and the data made sense to me. The explanation I developed seemed so sensible in retrospect that I could not believe that I hadn’t seen it earlier. Moreover, making sense of these data provided me with the theoretical analysis that has served as the cornerstone set of assumptions that has guided all my subsequent work.

Here’s how I made sense of the findings. First, I did not change my assumption that whereas high-prejudice people believe the stereotype, low-prejudice people do not (to make sure, I did a study to test this assumption). Indeed, low-prejudice people renounce stereotypic thinking and have developed egalitarian personal beliefs. Thus, low- and
high-prejudice people have different personal beliefs about blacks. However, having been socialized into the same culture, both low- and high-prejudice people are equally knowledgeable about the cultural stereotype of blacks (I did a study to test this assumption explicitly). Indeed, this is a very frequently activated knowledge structure for all people in our culture. As a result, whether one believes that the stereotype is valid or not, it is very easily activated. The priming task activated the stereotype. And because the priming was done below the level of conscious awareness, it could not be monitored and inhibited by subjects who believed that they should not make stereotype-congruent judgments (i.e., low-prejudice people). When they are aware that the stereotype can affect their judgments, low-prejudice people make a conscious decision to refrain from making stereotypic judgments. What is really important about this analysis is that people are not always aware of when the stereotype affects their judgments. It is so easily activated that one has to be extremely vigilant in detecting instances when judgments of others may be clouded by the stereotype. Indeed, it appears that the stereotype (rather than one's personal belief) is what gets activated by default. It takes conscious attention, energy, and effort to inhibit the stereotype and instead activate one's personal beliefs.

This theorizing led me to develop an analysis of the challenges associated with reducing prejudice. Conscious decisions to renounce prejudice do not immediately eliminate prejudiced responses. That is, overcoming prejudice requires overcoming a lifetime of socialization experiences. I have likened the process of reducing prejudice to that of breaking a bad habit in that people must make a decision to eliminate the habit and then learn to inhibit the habitual responses. It does not occur all at once. It is a long process that requires a great deal of hard work and effort. As with breaking any habit, people are likely to meet with mixed success.

I also began to think about new questions. What are the consequences of violating one's nonprejudiced beliefs and standards? What processes are involved in overcoming prejudice? What are the implications of this analysis for intergroup tension and our prospects for improving intergroup relations? Indeed, what was exciting to me about this analysis was that it provided me with a whole new set of questions to explore. I had a research agenda that would extend well into the future. Moreover, I wasn't stupid and I hadn't failed!

Phase 4: Coming Full Circle: Applying Science to the Real World

The final phase of scientific activity involves coming full circle and applying research findings to the real world. When a substantial body of literature has been accumulated, it sometimes becomes possible to
use the knowledge in applied settings. The really difficult issue here is deciding how much knowledge is sufficient for applications to be successful and productive. For example, the research we did on lineup instructions and the presence or absence of the criminal from the lineup could help people who regularly conduct lineups generate fair and effective lineup procedures. I have had the opportunity to see the application of the scientific findings on the factors that affect eyewitness identification decisions to a very important real-world situation in an up-close and personal way. Because of my expertise in the eyewitness literature, I have been a consultant to defense attorneys in trials involving eyewitness testimony and have been invited on occasion to testify in court on the reliability of eyewitness testimony. It is not the job of an expert to offer an opinion about whether a given eyewitness was accurate but rather to educate jurors about the current state of knowledge concerning factors that can affect the accuracy of eyewitness identifications in general.

Testifying in court proved to be interesting, exciting, and stressful. It is a huge responsibility. I found it interesting to see the adversarial system up close, and it was exciting to play a role in criminal trials (one was a robbery, and another was a rape case). It was stressful because, as you might imagine, in an adversarial system both the defense and prosecuting attorneys want to win their cases. Thus, they have different goals in questioning the expert. The defense attorney, who is trying to discredit the validity of eyewitness testimony, structures his or her questioning to highlight the factors that may adversely affect a witness’s ability to make an accurate identification. The prosecuting attorney has another goal in mind: to do everything he or she can to undermine the credibility of the expert or, alternatively, to highlight inconsistencies in the research literature that can shake jurors’ confidence in the expert’s testimony. Testifying in court is also stressful because you are playing a role in something that can dramatically affect people’s lives (i.e., the defendant and the victim). That is, an expert’s testimony may affect whether jurors return a not-guilty or a guilty verdict. This type of interplay between science and the real world highlights for me the reasons why the application of scientific findings must be approached cautiously. It is important that the applications derive from well-established, well-replicated findings.

**Research as a Jigsaw Puzzle**

In many ways, doing research is like putting together a jigsaw puzzle. Some of the pieces can be found by reading through the literature and seeing what other researchers have done on the topic you wish to study. The goal of every study you design is to provide a new piece. However, unlike puzzles that come in a box, research puzzles have no picture that
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illustrates what the full puzzle will look like. In addition, there are no clear border pieces that provide the outline shape of the puzzle. Although this can often be a source of frustration, it is one of the main reasons why research is so stimulating and challenging: Research is a process of discovery that it is intellectually and personally satisfying.

Every experiment is designed with the goal of adding a new piece to the puzzle. Choosing the independent variables that will be manipulated and the dependent variables that will be measured determines the shape of the piece to be added. The results from the study, then, should neatly fit into the puzzle. However, the results don't always cooperate. Sometimes the results produce a piece that does not fit neatly into the puzzle. Its shape is different from the one expected, and so the researcher is required to see the puzzle differently. I believe that very often these unexpected findings (or oddly shaped puzzle pieces) lead to the most important discoveries. Unexpected findings cause researchers to think in novel and creative ways as it becomes clear that the current way of thinking about the phenomenon is not adequate to explain the new findings. As I indicated in the discussion of my dissertation research, this process can be frustrating. However, when one successfully works through the issues, it is fabulously rewarding.

Another interesting and rather seductive aspect to this notion of research as an amorphous puzzle is that you never really have the feeling that you are done. The puzzle is never complete. That is, the findings of the study you just completed provide answers to part of the puzzle but also lead to new questions. Before you have an opportunity to complete the project in terms of writing a research article for publication, you move on to the next step: designing the next study to provide the next piece to the puzzle. As a result, the research enterprise is always new. It creates new challenges, frustrations, and exciting opportunities.

The Importance of Programmatic Research

In thinking about research as a puzzle, it is important to realize that the puzzle is not completely without shape or direction. That is, one of the most important things I have learned about the process of doing research is how new questions build on the work one has done previously. Each new puzzle piece must build on and add to the existing pieces. Nowhere has this been more evident to me than in my ongoing program of research on prejudice and intergroup relations. You can think of this process of adding to the puzzle as tantamount to asking the following questions: If this finding is valid, then what question follows? What hypothesis should be tested next? To illustrate the process, let me take you through some of the key developments in my research program on prejudice and intergroup relations.
The cornerstone piece. My early work addressed an important paradox in the literature on prejudice: the persistence of prejudiced tendencies among those who claim to be nonprejudiced. The dissertation research I described earlier was designed to address this issue. The coexistence of these contradictory reactions has often been regarded with suspicion in the literature. Several theorists have resolved this conflict by assuming that verbal reports are not trustworthy indicators of attitudes and beliefs. In fact, the theme of most contemporary theories of prejudice is that individual prejudice has not been reduced but rather that the 

(expression) of prejudice has been modified (i.e., become more subtle) in response to legislative changes such as civil rights laws. These theories are somewhat discouraging because they offer little guidance or encouragement with regard to reducing prejudice. It was my belief that these conclusions are too simplistic. The question that my research addressed was, Can people who renounce prejudice have prejudiced tendencies? The answer is yes.

My dissertation research showed that there are automatic components to racial stereotypes and that those components are present even among people who report low-prejudice attitudes. It is only with effort and the exertion of controlled processes that low-prejudice people are able to overcome their stereotypical ideas. By exploring the structural representation of stereotypes and personal beliefs held by prejudiced and nonprejudiced individuals, I was in a unique position to address the question of whether in contemporary society people are less prejudiced (as suggested by many survey researchers) or whether their prejudices are simply more subtle and better disguised. This was incredibly exciting. My model suggests that conscious decisions to renounce prejudice do not immediately eliminate prejudiced responses. A strength of this model is that it explains the role of both conscious (mostly intentional) and nonconscious (unintentional) processes in one's responses to members of stereotyped groups. The change from being prejudiced to being nonprejudiced is viewed not as an all-or-nothing event but as a process during which the low-prejudice person is especially vulnerable to conflict between his or her enduring negative responses and endorsed nonprejudiced beliefs. For those who renounce prejudice, overcoming the "prejudice habit" presents a formidable task that is likely to entail a great deal of internal conflict over a protracted period.

Adding to the puzzle. The next step in my program of research was to examine the consequences of this type of internal conflict. My students and I have been interested in examining the challenges faced by individuals who have internalized nonprejudiced personal standards and are trying to control their prejudiced responses but who sometimes fail. Specifically, we examine the emotional and motivational consequences of the fact that negative emotions and stereotypes may be automatically
activated even in nonprejudiced individuals. How do you think they should respond to such failures? How would you feel? And why would you have such reactions?

Our empirical strategy for exploring these questions is quite straightforward. We simply ask subjects to report how they should respond to members of stigmatized groups (e.g., blacks, homosexuals, women) and then ask them to report how they actually respond. Although people who score low on traditional measures of prejudice indicate that they should not respond with prejudice, many of them also report that very often they do. That is, many low-prejudice people respond with more prejudice than they personally find acceptable. When their actual reactions violate their personal standards, low-prejudice people experience guilt or "prejudice with compunction," but prejudiced individuals do not. For low-prejudice people the coexistence of such conflicting reactions threatens their nonprejudiced self-concepts.

Putting it all together. Seeing the developments in the research program over the years has truly been rewarding and stimulating. By putting the pieces of the puzzle together, we really had something to say about the processes involved in overcoming prejudice. In contrast to the rather pessimistic view that little progress is being made toward the alleviation of prejudice, our analysis suggests that many people are embroiled in the arduous task of breaking the prejudice habit. The first step in the model is the establishment and internalization of nonprejudiced standards. However, the establishment and internalization of nonprejudiced personal standards does not imply that change is complete.

During the early phases of the prejudice reduction process, we can expect that contact with members of a stereotyped group will lead to the automatic activation of the stereotype and its associated affect. Moreover, during these early phases of the prejudice reduction process, low-prejudice people should be particularly likely to experience discrepancies between their nonprejudiced standards and their actual responses. If low-prejudice people do not evaluate their actual responses in light of their personal standards, they will exit the process and will not experience a negative affect. If, however, they do evaluate their actual responses and recognize them as being more prejudiced than their personal standards permit, they will experience a threat to their nonprejudiced self-identity and guilt.

We have also found that failures to live up to well-internalized standards, along with the guilt such failures engender, can actually help people more effectively live up to their nonprejudiced standards in the future. The guilt associated with such failures serves as a psychological signal that something has gone wrong and needs attention. The signal causes low-prejudice people to slow down their responses, attempt to understand why the failure occurred, and try to figure out how to avoid
failures in the future (and thus avoid future guilt feelings). These reactions to failure experiences help low-prejudice people learn to inhibit unacceptable (prejudiced) responses and replace them with responses based on their nonprejudiced beliefs in later phases of the prejudice reduction process. The encouraging aspect of this model is that it suggests that people can benefit from their failure experiences and make progress in learning to respond consistently with their nonprejudiced standards. Although the process is not easy and clearly requires effort, time, and practice, prejudice appears to be a habit that can be broken.

But we are not done yet . . . Although this prejudice reduction model has encouraging implications concerning the progress being made toward the alleviation of prejudice, the puzzle is far from complete. The model needs additional testing and further development, and we are working on those issues. In addition, we are exploring new directions for our research program. For example, I think an important limitation of our previous work is that we have focused almost exclusively on the nature of the internal conflict (i.e., the conflict between personal standards and actual responses) experienced by low-prejudice people. This may limit the applicability of our analysis in addressing the everyday types of interpersonal situations in which prejudice is problematic. Indeed, I believe a limitation of most models of prejudice in addressing pressing social issues is that they have focused primarily on intrapersonal processes (i.e., change within the person). Few theorists have explored the implications of their models in the interpersonal arena in which people have to manage or negotiate interactions with others (i.e., majority group members with similar and dissimilar values and minority group members who have been the target of prejudice historically).

To address these issues, we are currently expanding our research program in two major directions. The new lines of research hold great promise for adding important new pieces to the puzzle of intergroup prejudice. The first line of research focuses on the consequences for low- and high-prejudice majority group members when there is conflict between their standards and social pressure from other majority group members. The second line of research explores the interpersonal dynamics of intergroup contact.

Majority group members often encounter situations in which there is pressure from other people to respond in ways that conflict with their own personal standards. It is important to consider how people negotiate situations in which their personal standards are at odds with situational social pressures. Social pressures that conflict with personal standards can be especially powerful when the “others” have the power to allocate rewards or punishments (material or social). For example, an employee with a low-prejudice personal standard may feel compelled to laugh at her boss’s derogatory jokes about homosexuals because she doesn’t want
to hurt her chances of getting a raise. In situations like these, it appears that the individual is pulled in two directions by competing motivations. That is, he or she must either (1) risk social disapproval and/or sanctions from others or (2) risk self-disapproval or self-criticism for violating his or her personal standards. Such competing motivations are likely to create conflict and momentary decision uncertainty for the individual. How is the uncertainty resolved? Which motivation wins out? And how do people feel about their behavior in these situations?

In a sense, we are asking how people deal with interpersonal situations when their standards are put on the line. Nowhere are people's standards more on the line than when they interact with members of minority groups. We are exploring the relevance of our work on the nature of personal standards to understanding the nature of intergroup tension. The tension that results when members of different groups come into contact is presumed to underlie the conflict and the interpersonal difficulties faced by both majority group and minority group members as they try to negotiate or manage their intergroup encounters. The goal of this most recent aspect of our research program is to provide an analysis of the psychological experiences and challenges that may underlie the tension felt by both majority group and minority group interactants. I believe that the nature of intergroup tensions in interpersonal relations must be understood before intervention strategies to alleviate such tensions can be developed.

To explore these issues, we are up to our old trick of scripting elaborate dramas for subjects and allowing them to determine the end of the drama by virtue of how they respond to the scenarios we have created. For example, to address the social pressure issue, we scripted a simulation of the employee-boss scenario discussed above. Our cover story was quite elaborate and required a fair amount of acting on the part of the experimenter and the confederates. In this study, the experimenter and the two confederates have specific roles to play. The experimenter explains that the goal of the study is to examine the relations between employers and employees in a simulated job scenario. The situation is set up so that the subject and one of the confederates are told that they are to play the role of two new employees in a television network programming team. The other confederate is assigned the role of program director and thus has power over the two employees. The program director will, based on the performance of the employees on preliminary tasks, assign the employees to subsequent tasks, one of which is highly desirable (it involves selecting comedians for the network comedy special) and the other is clearly less desirable (it involves verifying entrant numbers for those competing for the special). One of the initial tasks involves rating jokes told by a comedian. We arranged for the subject and the program director to watch the initial set of jokes together. Here was where the key manipulation of social pressure was introduced.
Two of the comedian’s jokes were made at the expense of homosexuals, the target group of interest in this study. The social pressure conditions were created by the nature of the program director’s response to these key jokes. In the low-prejudice social pressure condition the program director indicated displeasure at the jokes by shaking his head and sighing. In the high-prejudice social pressure condition he indicated approval of the jokes by chuckling and nodding. In an ambiguous condition the program director showed no obvious reaction to the jokes. Because we had low-, moderate-, and high-prejudice subjects in this study, we could examine how subjects at each level of prejudice responded to social pressure that was consistent with or at odds with the subjects’ personal standards. One of the key dependent variables is subjects’ rating of the jokes about homosexuals. We know from pretesting that low-prejudice subjects believe that they should not rate these jokes as funny. High-prejudice subjects believe that rating the jokes as funny is acceptable. Thus, if low-prejudice subjects rate the jokes as funny, they will violate their personal standards, which our previous research suggests, should make them feel guilty.

As with the eyewitness identification research, our scripts have to be believable and each phase of the study must be executed with precision. Creating situations in which the subject can legitimately behave in a prejudiced fashion and not flag to the subjects that we are studying prejudice is quite challenging indeed. We appear to have been successful. High- and low-prejudice subjects alike appear to be highly responsive to social pressure. Although high-prejudice subjects generally rated the jokes as more funny than did low-prejudice subjects, low-prejudice subjects rated the jokes as more funny in the high-prejudice social pressure condition compared with either the ambiguous or the low-prejudice social pressure condition. Similarly, high-prejudice subjects rated the jokes as less funny when there was social pressure to behave without prejudice compared with the other conditions. We are currently in the process of exploring the consequences of responding to social pressure in ways that violate people’s personal standards (e.g., Do low-prejudice people feel guilty when they violate their standards?).

This type of research brings with it a whole new set of challenges. We have to know subjects’ prejudice levels before they participate in the study. Thus, we have to obtain a measure of prejudice in a setting that appears to be unrelated to the research setting. To accomplish this, we typically collect a measure of prejudice when subjects fill out a large number of questionnaires in the classroom setting early in the academic semester. We then have to invite subjects of varying levels of prejudice into the lab to participate in our studies. It is important that neither the experimenter running the study nor the confederates be privy to the subjects’ prejudice levels. If they were to know this information, it might affect their behavior and contaminate the research findings. We go to
great lengths to ensure that experimenters and confederates are blind to
the subjects' prejudice levels; for example, the person who calls the sub-
jects and thus knows the subjects' prejudice levels is never the person
who runs the experimental session.

I've very much enjoyed adding to the puzzle of intergroup preju-
dice. My work in this area, as was true of my work with Roy Malpass
on eyewitness identification, illustrates the process of doing research.
Many of the questions I have asked derived from real-world observa-
tions. In working on these issues, we took our questions into the
research world, where we could design studies to test our hypotheses.
Over the years we have cycled often between the theory world and the
research world. Our ultimate goal is to add sufficiently to the puzzle so
that we can move on to the application phase and use our knowledge
to help people learn to overcome their prejudices and contribute to the
reduction of intergroup hostilities. The good news is that we have, I
believe, made substantial progress in addressing these issues. The other
good news is that our previous work has provided the foundation for
us to move forward so that we can add new pieces to the puzzle of intergroup prejudice. The key to this success is that our work is pro-
grammatic. Each study builds on the last. Thus, our work is cumulative.
It is through the process of doing such programmatic research that the
puzzle takes shape.

WHO DOES RESEARCH?

When I first read textbooks and saw studies discussed with citations
indicating the authors of an article, somehow these people didn't seem
real to me and the process of doing research was not at all apparent from
the brief descriptions of the studies. In textbooks, you read only about
the conclusions of research studies. It all seems so abstract, so neat and
tidy. You don't get a real feeling for what goes into a single study, let
alone a whole program of research. So when you think about who does
research, most often images of faceless people working at universities
and research institutes come to mind. Rarely do you get the feeling that
people like yourself do research, nor do you get the image that research
is fun. However, if you take a look around any university, you will find
many scholars actively involved in research, and in many instances you
will find people like yourself playing key roles in the research enterprise.
In addition, if you were to chat with these people, you would probably
come away with the image that research is a dynamic and enjoyable
enterprise.

Over the years I have had the good fortune to have a great number
of outstanding graduate and undergraduate students collaborate with
me on research. Indeed, without them, it would be virtually impossible to do the type of research we do and it would not be as much fun. We have a very active and dynamic lab. Every semester between fifteen and twenty undergraduates participate. These students participate in all aspects of the research. They contribute to hypothesis generation and the operationalization of our independent and dependent variables as well as contributing to the scripting of the dramas and the data collection. They are centrally involved in the data-coding phase of the research and in interpreting the findings from our studies. Every week we have a two-hour meeting in which we discuss the various projects we are working on that semester. Oddly enough our preferred meeting time is Friday afternoon from 2 to 4 P.M. We find that this is an enjoyable and relaxing way to cap off the week. During these meetings some of our discussions are theoretical. Others are problem-solving meetings (i.e., how to effectively operationalize a variable, how to develop a compelling script that will involve the subjects, how to get around social desirability concerns). Our discussions are typically lively and spirited. What makes them so enjoyable is that we all feel that we are working on important issues and developing high-quality research projects.

After they have been involved in the research for awhile, most of the students tell me that they didn't really know what to expect. If anything, they saw it as a necessary evil (i.e., it would be a rather stuffy, dry, and tedious enterprise) if they wanted to get into graduate school (i.e., it would look good on a résumé). However, in the process of working in our lab, students come to learn that their preconceptions were wrong and also come to learn a lot about themselves and how smart they are. They figure out that they can think creatively about research and have good ideas. Many of the students who have worked in my lab have done independent research projects (some of which have been published), and a very large number of them have gone on to graduate school. Our research team is a very closely knit group. After students graduate, they regularly send me letters and postcards to let me know how they are and what they are doing. When they visit Madison, they stop by to participate in our Friday afternoon meetings. They are interested in seeing what progress we've made and what our latest findings indicate. I find this quite remarkable.

For me, one of the most rewarding aspects of research is working with students. I enjoy watching students get excited about ideas and "get hooked" by the process of doing research. The students who participate in my lab work incredibly hard and have contributed greatly to the research. Thus, when Gary and Matt (the editors) asked me to submit a picture of myself to appear in this book, the idea of sending a picture of "just myself" didn't feel right. Instead, I submitted a picture of all the people currently working in my lab (unfortunately a few people were out of town that day, so only their names appear).
CONCLUSION

Getting involved in research was clearly a career-shaping event for me. I am happy to report that my passion for research has grown over the years and that I cannot imagine myself in a different career. This is not to say that research is for everyone, but an important thing to take away from this chapter is the idea that you should seek out opportunities to get involved in your area of interest. Whether your interest is in psychology, sociology, political science, economics, biology, chemistry, physics, mathematics, astronomy, geology, women’s studies, or music, at most universities you will find people actively engaged in research. Not everyone will be so fortunate as I was, to be asked by a faculty member to join his or her research group. But wonderful opportunities are there for the person who is willing to go after them. Seek them out and enjoy!

Acknowledgments

I would like to thank all the students who have participated in my research program over the years. Pictured in the photograph with me are the students (a wonderfully fabulous group) who worked with me during the spring semester of 1993. These students and those who preceded them are part of what has made my research career so rewarding. Their tireless efforts have been invaluable and are deeply appreciated. I’m the person in the front and center of the photograph. Surrounding me on the steps in front of our psychology building are Sophie Evett, Ivan Amodt, Dave Froning, Julie Zuwerink, Terri Conley, Kathy Lepage, Paige Levin, Dan Pilloff, Craig Meyer, Jennifer Zerbst, Renee Fry, Sam Shapiro, Jana Price, Sara Andrews, Michele Marvich, Kevin Thompson, Sharon Jenik, Tracy Sweeney, Kelli Duehning, Kathy Zeitz, and Tracy Holz. A couple of our lab members were not able to be at the picture session: Sarah Pressley and Ireliz Martinez.

SUGGESTED READINGS


