by allowing the lowest-ranking member of a group to speak first, followed by the next-to-lowest, followed by the next in line, and so on. That way, no one is afraid to differ with an opinion expressed by someone higher up in the company.

A third preventive measure is for groups to set up other groups—with other leaders—to consider the same question (thereby allowing for a comparison of different answers). Fourth, group members should periodically discuss the group’s deliberations with trusted associates, and should report these discussions to the group. Fifth, groups should invite outside experts or qualified colleagues to attend the group meetings, and should encourage them to challenge the group’s consensus. In fact, Janis proposed that one of the best ways to avoid groupthink is to officially appoint someone in the group to be a devil’s advocate. Each of these measures legitimizes disagreement and capitalizes on the fact that dissenting minorities reduce conformity.

CONCLUSION

The theme of this chapter is a simple one: Because people are social by nature, their judgments and decisions are subject to social influences. Even when decision makers operate alone, they often tailor their behavior in anticipation of how it will be evaluated by others. Consequently, any comprehensive account of judgment and decision making must include social factors.

In some cases, these factors influence decisions without affecting underlying judgments. For example, many people respond to conformity pressures and groupthink by advocating a choice that they do not agree with personally. In other instances, judgments may be distorted. Asch found, for example, that a handful of his subjects actually experienced a distortion in perception and were unaware that the majority had influenced them. Similarly, Latané and Darley found that many unresponsive bystanders altered their perception of the situation when responsibility was diffused. As Latané and Darley (1970, p. 65) put it: “[These] subjects almost uniformly claimed that in a ‘real’ emergency, they would be among the first to help the victim.”

The social influences discussed in this chapter are only a few of hundreds that hold sway in daily life. They are meant to be illustrative, not exhaustive, and as in the case of social facilitation effects, they show that social factors can improve performance as well as hinder it. Chapter 18 continues this discussion by comparing group performance with the performance of individuals.

GROUP ERRORS AND BIASES

If a group succeeds in avoiding groupthink, will it make better judgments and decisions than an individual would? Do groups operate with the same heuristics and biases as individuals?

Relatively few studies have compared individual-level heuristics and biases with group-level heuristics and biases, and as of yet, there have been no major reviews contrasting the two. Of the studies that have been published, however, most suggest that biases in attribution and judgment are similar in individuals and groups. The first part of this chapter discusses several of these parallels, and the second part focuses on how groups and individuals differ.

GROUP JUDGMENTS AND DECISIONS

As mentioned in Chapter 16, the fundamental attribution error is a tendency to overattribute an individual’s behavior to dispositional causes. For example, people interpret an essay as reflecting its author’s personal position even when they are told that the author was forced to take that position (Jones & Harris, 1967). The tendency to make unwarranted dispositional attributions about a group is known as the “group attribution error.” According to Scott Allison and David Messick (1985, p. 564), who first documented the group attribution error, “Both the fundamental attribution error and the group attribution error share a common ground, and that is our tendency to ignore external determinants of behavior and to assume a correspondence between behavior and some underlying attitude.” In their research, Allison and Messick found that subjects inferred greater public support for water conservation when a city manager enacted conservation measures than when no measures were adopted, even though there was little reason to suppose that public opinions mirrored the decision of a single government employee. Similar findings have been reported by Diane Mackie and Scott Allison (1987).

Another attributional parallel exists between “self-serving” biases and “group-serving” biases. In the former, individuals make dispositional attributions for their successes and situational attributions for their fail-
ures. In the latter, group members make dispositional attributions for group successes and situational attributions for group failures. Donald Taylor and Janet Doria (1981) compared self-serving and group-serving biases among intercollegiate athletes and found that group-serving biases were at least as strong as self-serving biases. Specifically, athletes exhibited group-serving biases by attributing their team's success to good team play more often than they attributed failures to bad team play.

Still another group-level attributional bias is known as the "outgroup homogeneity bias." Just as individuals perceive themselves as more varied than other people, groups perceive their own members as more varied than members of other groups (Mullen & Hu, 1989). For instance, in one experiment, members of four different student clubs at Princeton rated members of their own group and members of three other groups on personality dimensions such as introverted/extroverted, arrogant/humble, and laid-back/uptight (Jones, Wood, & Quattrone, 1981). The results showed that students rated members of their own group as more varied in personality than members of the outgroups, regardless of which club students were in.

Now you might say, "Sure they thought their group was more varied—they knew more members of their own club than the other club." As it turned out, though, outgroup homogeneity biases were unrelated to the number of ingroup or outgroup members that students knew. Furthermore, outgroup homogeneity biases occur in groups that have quite a bit of contact with each other, such as females and males (Park & Rothbart, 1982). Thus, outgroup homogeneity biases are not simply the result of differences in familiarity.

One serious consequence of outgroup homogeneity biases is that they help to perpetuate stereotypes. Because outgroup members are perceived as relatively homogeneous, their individuality is undermined. Unfortunately, the tendency to perceive outsiders as homogeneous is particularly common in international relations. For example, when Soviet leader Yuri Andropov came to power, former U.S. National Security Advisor Zbigniew Brzezinski wrote: "It's wrong to divide these people into conservatives or liberals, hawks and doves, Stalinists or non-Stalinists. The point is that they're all tough and brutal" (Schme- mann, 1985, March 3, p. 55). Later events proved how mistaken Brzezinski was.

Very few studies have looked at whether heuristics such as availability and representativeness operate in group judgments. In one rare exception, Linda Argote, Mark Seabright, and Linda Dyer (1986) presented individual subjects and five-person groups with variants of the lawyer-engineer problem discussed in Chapter 10. Argote, Seabright, and Dyer found that groups relied on the representativeness heuristic even more than did individuals. Scott Tindale, Susan Sheffey, and Joseph Filkins (1990) also found that four-person groups were more likely than individuals to commit the conjunction fallacy when presented with problems similar to Item #1 of the Reader Survey (another result of representativeness).

What does all this mean? Although more research is certainly needed, these preliminary findings suggest that individual-level heuristics and biases continue to operate in group judgment and decision making. Indeed, these biases are sometimes stronger in groups than individuals. In the case of representativeness, for example, Argote, Seabright, and Dyer (1986, p. 74) concluded that: "Group discussion appears to amplify the inclination of individuals to judge by representativeness when assessing category membership."

GROUP POLARIZATION

The tendency for group discussion to amplify the inclinations of group members is known as "group polarization" (Moscovici & Zavalloni, 1969). This phenomenon was first documented by James Stoner (1961), who found that subjects were more willing to advocate risky actions after they had participated in a group discussion. Stoner referred to this change as the "risky shift," and since the time of his initial experiment, hundreds of studies have explored the topic. After all, if group polarization leads to greater risk taking on the part of groups than individuals, Stoner's findings have profound implications for national security, business, and other areas in which groups make important decisions.

In roughly four out of every five risky shift experiments, the procedure goes something like this: First, subjects are given a questionnaire in which their tendency to take risks is assessed. This questionnaire is usually the "choice-dilemmas" survey developed by Nathan Kogan and Michael Wallach (1964), which describes 12 hypothetical situations involving a person who has to choose between a risky or conservative course of action. For example, in one item, a 45-year-old accountant has to decide whether to risk heart surgery or live with a debilitating heart condition (see Figure 18.1).

In the choice-dilemmas survey, subjects are asked to indicate what the odds of success would have to be before they would advise the person to choose the risky alternative. This administration of the questionnaire is known as the pretest. Then groups of five or so subjects discuss the 12 problems and reach a consensus on what level of risk to advocate for each hypothetical situation. This phase is known as the treatment test. The risky shift is simply measured by subtracting average scores on the pretest from average scores on the treatment test.

Although there are dozens of variations on this theme, research results have been fairly consistent. Group discussion usually leads people to advocate riskier courses of action than they would otherwise.
Mr. B, a 45-year-old accountant, has recently been informed by his physician that he has developed a severe heart ailment. The disease would be sufficiently serious to force Mr. B to change many of his strongest life habits—reducing his work load, drastically changing his diet, giving up favorite leisure-time pursuits. The physician suggests that a delicate medical operation could be attempted which, if successful, would completely relieve the heart condition. But its success could not be assured, and in fact, the operation might prove fatal.

Imagine that you are advising Mr. B. Listed below are several probabilities or odds that the operation will prove successful.

Please check the lowest probability that you would consider acceptable for the operation to be performed.

- The chances are 9 in 10 that the operation will be a success.
- The chances are 7 in 10 that the operation will be a success.
- The chances are 5 in 10 that the operation will be a success.
- The chances are 3 in 10 that the operation will be a success.
- The chances are 1 in 10 that the operation will be a success.

**FIGURE 18.1**
This is an item from the Choice Dilemmas questionnaire developed by Nathan Kogan and Michael Wallach (1964, pp. 256-257).

When the initial inclination is toward caution, however, group discussion can sometimes lead to a "cautious shift." Consequently, many researchers now adopt the more general term "choice shift" to describe the basic phenomenon.

As popular as choice shift research has been, group polarization often extends far beyond the issue of risk taking. For example, David Myers and George Bishop (1970) found that highly prejudiced students became even more prejudiced after discussing racial issues with one another, whereas relatively unprejudiced students became even less so after discussing the same issues. Similarly, Myers (1975) found that the gap between "chauvinists" and "feminists" widened after members of each group discussed women's issues among themselves. This type of research is based on a "group composition" paradigm, in which groups are composed of people with the same inclination (an inclination that becomes amplified through group discussion).

Another type of group polarization research uses a paradigm in which the problem itself produces an inclination that becomes polarized. David Myers and Martin Kaplan (1976) found, for instance, that simulated juries presented with weak incriminating evidence became even more lenient following group discussion, whereas juries given strong evidence became even harsher. Thus, initial leanings based on legal evidence became polarized through group discussion (for overviews on group polarization and its causes, see Myers, 1982; Myers & Lamm, 1976).

**HORSE SENSE**

"A man bought a horse for $60 and sold it for $70. Then he bought it back for $80 and again sold it for $90. How much money did he make in the horse business?"

This problem—which appears as Item #20 of the Reader Survey—made its research debut in a classic study by Norman Maier and Allen Solem (1952). Maier and Solem found that only 45 percent of the college students they asked could solve the problem when working alone. When students worked in five- or six-person groups, however, they did considerably better. Students who worked in groups with an "inactive" leader (a person who simply observed the conversation) answered correctly 72 percent of the time, and students who worked in groups with a "permissive" leader (who encouraged all group members to express an opinion) answered correctly 84 percent of the time.

To see how an effective group might solve the problem, let's step through the mists of time and listen to an imaginary group discussion taking place in Maier and Solem's laboratory:

**WENDY [The group leader]:** I'm suspicious of the problem—it seems deceptively simple, and I don't trust psychologists. Let's each share what we think the answer is, and say a few words about why we think our answer is right.

**BENNETT:** I'm pretty sure the answer is $10. The way I solved the problem was to think in terms of a stock exchange. If I buy a share of stock for $60 and sell at $70, I'm up $10. Then, if I change my mind and buy the same stock at $80, I've just paid $10 more than $70 and erased my earlier earnings. Selling the stock at $90 leaves me $10 ahead, though, so I come out okay.

**JILL:** My answer was $20, because the man makes $10 the first time he buys the horse and $10 the second time. After hearing Ben, though, I'm not sure whether this answer is correct.

**WENDY:** Don't worry about whether you're right—we're just trying to lay out all the possibilities. What about you, Steven?

**STEVEN:** I think the right answer is $30. The man starts with $60 and ends up with $90, so how can his profits be anything other than $30?

**AMY:** His profits would be $30 if he never had to borrow any money, but after selling the horse for $70, he had to come up with an extra $10 to buy the horse for $80. This leaves $20 profits—$30 minus the extra $10 he borrowed.

**WENDY:** So you agree with Jill?
AMY: Yes. In fact, I think the only reason this problem seems confusing is that the same horse is being bought and sold. If the problem involved two separate horses, the answer would be obvious.

BENNETT: What do you mean?

AMY: Well, suppose the man bought Horse A for $60 and sold the horse for $70. How much profit would he have made?

BENNETT: $10.

AMY: Now suppose the man buys a second horse—Horse B—for $80 and sells the horse for $90. How much has he gained?

BENNETT: Another $10.

AMY: Exactly, so the man ends up $20 ahead. His profits don’t depend on whether one horse is traded or two horses are traded—he gains $20 either way. If you like to think of the problem in terms of stocks, imagine trading two separate stocks rather than one. It’s a mistake to think that buying the second stock for $80 represents a loss of $10—to lose money, the man would have had to sell a stock for less than he bought it for.

Now freeze the scene, and imagine that you are a member of this group. Amy concludes her explanation, and your turn comes to explain why you answered the problem as you did. After you finish speaking, the group spends a few more minutes discussing the problem. Then the experimenter asks each member of the group to record a final answer. You have a choice: You can either maintain the answer you gave to Item #20 of the Reader Survey, or you can change your answer. What would you do?

Most people in this situation give the correct answer—$20. Group members who begin with the correct answer rarely change following discussion, and others usually answer correctly after group discussion. Although Maier and Solem (1952) found that groups outperformed individuals regardless of whether group leaders were inactive or permissive, accuracy was highest when group leaders actively encouraged all group members to share their point of view.

The benefits of permissive leadership were particularly apparent when groups began with only one member who had the correct answer. In such cases, 76 percent of the students in permissive groups answered correctly, compared with only 36 percent of the students whose group leaders had been inactive. This finding is consistent with two points made in the last chapter: (1) The best way to avoid groupthink is to explicitly encourage dissenting viewpoints (Janis, 1982), and (2) under the right conditions, minorities can dramatically improve the accuracy of group judgments (Nemeth, 1986).

Maier and Solem (1952) showed that open discussion can lead to large increases in accuracy. Despite the advantages of group discussion, however, it is worth noting that not all group members in Maier and Solem’s experiment solved the problem. Even though 63 of 67 groups contained at least one member who knew the correct answer at the outset, roughly one out of every five subjects answered incorrectly after group discussion. Edwin Thomas and Clinton Fink (1961) found similar results using the same horse-trading problem. In their experiment, 29 of 44 groups contained at least one member who knew the correct answer before group discussion, but only 15 groups turned in unanimously correct answers afterward. Thus, group discussion led to a significant improvement in accuracy, but it did not ensure that all group members answered accurately.

ARE SEVERAL HEADS BETTER THAN ONE?

Group judgments tend to be somewhat more accurate than individual judgments, though this is not always the case. Group accuracy depends on a variety of factors, including the nature and difficulty of the task, the competence of group members, the way that group members are allowed to interact, and so forth. Reid Hastie (1986) published a review that looked at many of the factors which affect group judgment, and he compared groups and individuals on three different types of judgment tasks: (1) judgments of quantities and magnitudes, such as the number of beans in a jar; (2) judgments of the logically correct answer to brain teasers, such as the horse-trading problem; and (3) judgments in response to general knowledge questions, such as “Is absinthe a liqueur or a precious stone?”

With respect to quantitative judgments, Hastie concluded that groups are usually slightly more accurate than individuals (for readers acquainted with statistics, Hastie estimated this difference to be roughly one eighth of a standard deviation unit). More recent research by Janet Sniezek and Becky Henry (1989, 1990) suggests that, in some cases, this advantage may be larger than Hastie estimated. Using a measure known as “standardized bias,” Sniezek and Henry found that three-person groups were 23 to 32 percent more accurate than individuals—two or three times the margin typically found in the studies reviewed by Hastie.

As for brain teasers and other problems of logic, Hastie found that groups usually outperformed individuals, but that the best member of a group, working alone, tended to do better than the group as a whole. Likewise, he concluded that groups usually outperformed the average individual at answering general knowledge questions, but that the best member of a group tended to equal or surpass the performance of the group. Thus, across all three types of judgment he examined, Hastie found that groups made more accurate judgments than average individuals, though the best individual in a group often outperformed the group as a whole.
Similar results were found by Gayle Hill (1982) in a major review entitled “Group versus Individual Performance: Are N + 1 Heads Better Than One?” In this article, Hill reviewed 50 years of research on individual and group performance. Although she looked at many types of performance other than judgment and decision making, part of her review focused on creativity and problem solving. What she found was that groups were often superior to average individuals, but groups frequently performed worse than the best individual in a statistical aggregate of people (a noninteracting group of the same size). Hill found that, for easy tasks, enlarging the size of a group simply increased the chances that it would contain at least one member who could solve the problem. For difficult tasks, the main advantage of teamwork seemed to be that group members could pool their resources and correct each other’s errors.

Hill also looked at brainstorming. In particular, she compared the number of ideas generated in group sessions with the number of ideas generated when the same number of people brainstormed alone and later added their ideas together. Hill found that brainstorming was more effective when ideas were generated independently and later combined than when it was conducted in a group session.* She concluded that the superiority of group performance was mainly a function of aggregation (i.e., of simply having more people working on the problem) rather than group interaction per se. From a practical perspective, this means that the best way to generate solutions to a difficult problem is by having several people work on it independently and later share their ideas.

THE BENEFITS OF DICTATORSHIP

Although group judgments tend to be more accurate than individual judgments, accuracy depends in part upon how group members combine their answers (Davis, 1973). A study that illustrates this point was published by Janet Sniezek (1989). Sniezek compared five types of group decision techniques: (1) “consensus,” in which face-to-face discussions led to one judgment accepted by all group members; (2) the “dialectic” technique, in which group members were required to discuss factors that might be biasing their judgments; (3) the “dictator” technique (a.k.a. the best member technique), in which face-to-face discussions led to the selection of one group member whose judgments represented the group; (4) the “Delphi” technique, in which group members did not meet face to face, but instead, provided answers anonymously in a series of “rounds” until a consensus was reached or until the median judgment stabilized (the advantage of this technique is that the group is protected from members who might monopolize the discussion or who are unduly confident of their judgments); and (5) the “collective” technique, which prohibited any interaction among group members and simply averaged individual judgments together in order to arrive at a “group” judgment (in Sniezek’s study, the collective technique established a baseline level of accuracy for aggregation without social interaction).

Each group was made up of five college students, and each group used all five decision techniques. Groups began by using the collective technique, after which they adopted the other decision techniques in various orders. The judgment task was for students to estimate how much merchandise a campus bookstore would sell in the coming month—how many dollars of clothing, magazines, cards and gifts, and health and beauty items. Sniezek measured judgment accuracy in terms of a reduction in “absolute percent error” from actual sales figures.

What she found was that each of the first four techniques (consensus, dialectic, dictator, and Delphi) yielded more accurate judgments than simple aggregation (the collective technique), but the largest improvement was produced by the dictator technique, which reduced absolute percent error by three times the amount of any other technique. Interestingly, though, in every case the “dictator” of a group changed her or his final judgment in the direction of the collective mean, thereby increasing the amount of error. In other words, groups were able to select a highly accurate dictator, but the dictator invariably became democratic, and in so doing, reduced final accuracy.

Of course, Sniezek’s findings are specific to groups of a particular size (five) from a particular population (college students) working on a particular judgment task (sales forecasting). It would be foolish to assume that the dictator technique works best in all situations. Nonetheless, Sniezek’s experiment shows that group accuracy depends partly on the decision rules that groups adopt. Her results also demonstrate that, in some cases, interacting groups perform better than statistical aggregates of people who do not interact with one another. Thus, at least in certain situations, the superior performance of groups is a function not only of having “more heads than one,” but of “putting heads together.”

CONCLUSION

Because group performance depends on so many different factors, it is difficult to make broad generalizations (Tindale, 1989). For much the same reason, it is also difficult to reconcile mixed or contradictory results from group research. Are discrepancies due to differences in the
task? In group size? In the decision rules used? Ironically, the very richness of group research complicates the interpretation of experimental findings.

It is also the case that group judgment and decision making has not received as much attention as individual judgment and decision making, despite the ubiquity of committees, panels, boards, juries, and other decision making bodies. Furthermore, the line between individual and group research is often blurred by the fact that groups are, ultimately, comprised of individuals. For example, research on the group attribution error is really research on how individuals make attributions about groups. Similarly, choice shifts can be measured by comparing group decisions and individual decisions, or by comparing individual decisions made before and after group discussion. Only in the former case are group decisions actually made.

Notwithstanding these complications, research on group judgment and decision making suggests the following tentative conclusions:

- Many individual-level heuristics and biases appear to operate with equal force in groups.
- Group discussion often amplifies preexisting tendencies.
- Groups usually perform somewhat better than average individuals, particularly if an appointed leader encourages all group members to express an opinion.
- The best member of a group often outperforms the group (a fact that can sometimes be exploited by using the dictator decision technique).
- Brainstorming is most effective when conducted by several people independently, rather than in a group session.

Each of these conclusions is supported by a good deal of research, but because group performance is affected by so many factors, care should be exercised in applying such general conclusions to particular situations. Although decision makers are usually best off pooling their efforts, collaboration is no guarantee of a successful outcome.