Groups and Group Structure

The study of small groups has been an important aspect of social psychology (and other areas of psychology to a lesser extent) since its beginnings as a field. One of the main reasons, as pointed out by Joseph E. McGrath (Groups: Interaction and Performance, Englewood Cliffs, NJ: 1984), is that "groups are everywhere." We live in families, play with our friends, participate on teams, serve on committees, and work in crews. Thus, much of our everyday behavior occurs in groups. The study of groups has been grounded mainly in social psychology because of the central nature of the group for social behavior. Although there are some common features of all groups (e.g., awareness of each other as members, interdependence among members, the potential for interaction), groups differ widely based on the specific members, the goal or purpose of the group, the specific task demands, and the sociocultural context in which the group exists. This makes groups both interesting and difficult to study.

Group Formation and Development

Groups form and gain and lose members for a variety or reasons. Richard L. Moreland (in H. Hendrick [Ed.], Group Process, Newbury Park, CA, 1987) discusses four types of social integration that can lead to group formation. First, groups can form due to environmental integration. A classic study by Leon Festinger and associates (L. Festinger, S. Schaeter & K. Back, Social Pressures in Informal Groups, New York, 1950) showed that friendship groups tended to form as a function of physical proximity in a multiunit housing project. It is also quite likely that early social aggregates (tribes, settlements, etc.) formed in part because of environmental concerns such as access to resources and protection from the elements. Groups also form due to affective integration. Families, fraternities, social clubs, and informal friendship groups form mainly because the members like each other. Behavioral integration can also lead to group formation. A number of tasks are much easier to perform with several people (moving logs to build houses, farming large plots of land, etc.). Thus, each member's outcomes improve as a function of the behavior of others, behavioral interdependence being a key aspect of most definitions of what it means to be a group. Finally, groups can form because of cognitive integration. Simply realizing that one shares certain characteristics with others can lead one to perceive people with this common characteristic as a group. Henri Tajfel (Human Groups and Social Categories, New York, 1981) discusses a number of studies using the "minimal group technique" that show how even minimal and irrelevant category markers (blue vs. red hats) given to randomly composed groups will increase ingroup favoritism and the feeling of group identity.

Once a group forms, it does not remain static. Although the stages of group development and change are difficult to study, a number of researchers have attempted to describe them. Probably the most well-known model was proposed by B. W. Tuckman (Psychological Bulletin, 1965, 63, 384–399). After forming,
Tuckman argued, groups go through a conflict stage called storming which involves conflicts over the appropriate goals, norms, and roles in the group. The third stage, norming, occurs when the conflicts are resolved and the group becomes a cohesive whole. The fourth stage, performing, is where the group work is actually done. The final stage, adjourning, happens when the group dissolves or no longer functions as a group. Adjournment can be caused by the completion of the current task, unresolved conflicts that push the members apart over time, or, in cases of families and strong friendship groups, the death of one or more of the members. Thus, the same group will look quite different in terms of structure and process as it passes through different stages of development.

**Task-Performing Groups**

Although all different types of groups, from the minimal groups discussed above to families, have received research attention by psychologists, much of the work in social and organizational psychology has focused on task-performing groups. Such groups are typically formed for the sole purpose of performing some specific task, although they may serve other functions as well. One of the dominant findings from this area of research is that the task is important for understanding how groups operate. In a now classic study by J. Richard Hackman and Charles G. Morris (Advances in Experimental Social Psychology, 1975, 8, 15-99), a multitude of group process measures were assessed for laboratory groups working on three different types of tasks: production tasks (creativity or idea generation), discussion tasks (decision-making and problem-solving tasks), and planning tasks (planning and carrying out some action). Although the multiple process measures accounted for small portions of the variance in group performance, over 60% of the performance variance could be accounted for by task differences. Thus, group performance and process are heavily influenced by the type of task on which the group is asked to work. Although there are many ways that group tasks can be classified, a dominant distinction in the literature contrasts “cooperative” group tasks with “competitive,” or “mixed-motive,” tasks. Cooperative tasks involve group members who all have the same goal. Although the members may disagree as to the best solution or the appropriate procedures, all members want the same outcome (a safe flight for an airline crew, etc.). Competitive or mixed-motive tasks are those in which the group members do not share a common goal and often the better the outcome is for one member, the worse it will be for others. Because the theoretical orientations underlying research on these two types of tasks differ substantially, they will be discussed separately.

**Mixed-Motive/Competitive Tasks.** Much of the research on mixed-motive and competitive groups stems from the work on game theory originated by John von Neumann and Oskar Morgenstern (Theory of Games and Economic Behavior, 2nd ed., Princeton, NJ, 1947). Game theory attempts to define optimal choice strategies mathematically for players in different situations or “games.” One of the major games studied in psychology has been the Prisoner’s Dilemma game. One possible version of this game would have the following payoff structure: If both players cooperate, they both get a moderately positive payoff. If both players defect or compete, they get a moderately negative payoff. However, if one player cooperates and the other defects, the cooperating player gets a very negative payoff and the defecting player gets a very positive payoff. In this game, both players’ dominant or rational strategy is to defect, but if both players do so, they both receive negative payoffs (thus the “mixed-motive” idea).

Three areas of research have come out of this orientation: bargaining and negotiation, coalition formation, and social dilemmas. Bargaining and negotiation have tended to look at two-person situations (like the Prisoner’s Dilemma game). Variables of interest have been the amount of cooperation found, the effects of changing the payoff structure, and the amount of communication and information exchange allowed. The group structure is typically defined by the payoff structure of the game. Thus, both players can be equally powerful or one player can have power over the other. Although the research in this area is far too vast to summarize here, there have been a few consistent findings. The payoff structure of the game tends to be the most powerful variable in terms of explaining players’ responses. Players tend to maximize their payoffs (as they are typically told to do) to the degree that their understanding of the game allows. However, other variables are also important. Communication increases payoffs in most, if not all, bargaining situations, and exchanging information so that each player understands the motivations of the other is crucial in more complicated game structures. Reciprocity strategies (tit-for-tat) tend to work well in the Prisoner’s Dilemma game, as well as in other types of games. Players often take a competitive, winner-take-all, stance in bargaining situations, even when a more cooperative, problem-solving orientation would lead to better outcomes. However, a player taking a strong, competitive stance early in negotiations tends to gain increased payoffs. One interesting finding by Chester A. Insko and his colleagues (Journal of Personality and Social Psychology, 1990. 58, 68–79) is that teams playing against each other in the Prisoner’s Dilemma game tend to compete to a much greater degree than do individuals. Overall, the structure of the game, and the motivations and cognitions of the players, are all important for understanding how players react to bargaining and negotiation situations.
Coalition formation is defined as a situation in which two or more players combine resources in order to gain a better outcome in a multiperson game. Again, which coalitions will form and the subsequent payoff divisions largely depend on the payoff structure of the game. Coalitions with larger payoffs (and sometimes with fewer members) tend to form more often, and the payoffs are divided among the coalition members in relation to their relative power (the number and expected payoffs of other coalitions that members could form). However, equal splits of payoffs among members are not uncommon, especially among inexperienced players, and norms of fairness also influence coalition outcomes. For example, in "veto" games (where a particular player must be in the coalition for it to win), a purely rational model predicts that the veto player should get the entire payoff, yet this rarely happens in experiments using such games.

As research on coalition formation began to wane in the early 1980s, research on social dilemmas began to flourish. Social dilemmas are like multiperson Prisoner's Dilemma games. Each player of the game is always better off making the competitive (selfish) choice, yet, overall, the entire group is worse off if everyone makes the competitive choice. Funding public goods, donating money to charity, littering, and a number of other collective behavior situations can be viewed as social dilemmas. Much of the research in this area has been oriented toward increasing cooperative behavior. Robyn Dawes and his associates (e.g., Acta Psychologica, 1988, 68, 83–97) have shown that both fear of being exploited and greed (taking advantage of the situation) act as motivations for noncooperative responses, with greed being the more potent motive. In addition, Dawes has shown that group discussion of the dilemma greatly increases the level of cooperation, often to nearly 100%.

**Cooperative Tasks.** Cooperative group tasks are those in which the members of the group share the same goals and all receive the same payoff based on their collective action (although the payoff is often not in monetary form). A jury is an excellent example of a cooperative group. None of the members have a vested interest in the outcome of the trial. Each member is there with the same goal—to administer justice. If the jury verdict serves justice well, all of the members (as members of the larger society) benefit equally.

Early research on problem-solving groups showed that groups of four or five members were considerably more likely to solve relatively complex logic problems than were single individuals working on the problems alone. Most early theorists saw group discussion as a key aspect of the group's superior problem-solving ability. Through discussion, errors made by individual group members could be corrected, leading eventually to the group's adopting the correct solution. However, in 1955, I. Lorge and H. Solomon (Psychometrika, 20, 139–148) developed a simple model to explain the superiority of group problem solving with few, if any, process assumptions. Their model predicted that the probability that a group could solve a problem was 1.0 minus the probability that none of the members could solve the problem. By definition, according to this model, if at least one member of the group could solve the problem correctly, then the group would solve the problem correctly. The only information needed for this model is the a priori probability that any given individual can solve the problem.

In 1973, James H. Davis (Psychological Review, 80, 97–125) generalized the Lorge–Solomon model to encompass group performance in a wide variety of task settings: he called it Social Decision Scheme Theory (SDS). The model assumes that group consensus processes can be well represented as a combinatorial process in which individual preferences or responses are combined into a single group response. Assuming a mutually exclusive and exhaustive set of decision alternatives, Davis showed that one could estimate the likelihood of any given preference distribution among the group members by knowing the probability of any given individual’s choosing a particular alternative. Then the process of combining the members' preferences could be represented by an SDS matrix. The matrix contains conditional probabilities for a group choosing a particular alternative given a particular member preference distribution. Within SDS theory, the Lorge–Solomon model is just one of many possible combination processes. The theory also assumed that the preference structure of the group was key to understanding group performance.

One of the main findings from research using the SDS approach is that groups seem to operate under different types of decision processes, depending on the type of task on which they are working. Patrick Laughlin (in M. Fishbein [Ed.], Progress in Social Psychology, Hillsdale, NJ, 1980) has distinguished between "intellectual" and "judgmental" tasks. Intellecitive tasks have a demonstrably correct solution—a solution that can be demonstrated to be correct in the context of the group discussion. For intellecitive tasks, group decision processes tend to be well represented by either a "truth wins" (identical to the Lorge–Solomon model discussed above) or a "truth-supported wins" (at least two members must be able to solve the problem for the group to solve the problem) SDS. Thus, minorities that favor the correct alternative can overpower incorrect majorities. Judgmental tasks, on the other hand, do not have a demonstrably correct solution. For judgmental tasks, group decision processes are well represented by majority or faction size models. Thus, larger factions win out if a particular alternative cannot be demonstrated to be correct.
Majority processes are one possible explanation for the "group polarization" effect. Much research has shown that groups often exacerbate tendencies that are dominant at the individual level. Consequently, group responses tend to be more extreme or "polarized" relative to average individual responses. Although there are a number of theoretical accounts for this outcome, the effect is consistent with a majority decision process. Davis has also shown that member confidence plays a role in the consensus process. Low member certainty leads toward "equiprobability" processes in which any alternative brought up is equally likely to be chosen by the group. However, when member certainty is high, majority models usually provide good fits to the data. Davis has also shown that mock juries tend to work under a two-thirds majority process with a slight tendency toward a "not guilty" verdict; factions favoring this verdict are slightly more powerful than factions favoring the "guilty" verdict. Thus, the type of task and the preference structure of the group interact to affect group performance and the influence processes that underlie it.

More recent research has begun to focus on the informational or cognitive structure of groups. Garold Stasser and his associates (e.g., G. Stasser & W. Titus, Journal of Personality and Social Psychology, 53, 81–93, 1987) have studied extensively how the degree to which information is shared or unshared by all of the group members impacts on group performance and discussion content. The major finding from this research is that groups tend to discuss information that is already shared by most or all of the group members. Although unshared information can influence group decision outcomes, it rarely does because it tends not to be discussed. Research has also shown that members who share a large amount of information with the other members of the group are more influential. In addition, a growing body of research seems to indicate that shared background knowledge or "task representations" can influence both group processes and performance. Finally, research based on Daniel M. Wegner's idea of "transactive memory" (in B. Mullen & G. Goethals Theories of Group Behavior, New York, 1987) has shown that metaknowledge concerning who knows what within a group increases the amount of information available to all members of the group and that training members of a task-performing group together increases performance by increasing transactive memory.

Other Aspects of Group Structure

Although payoffs, preferences, and cognitions are all powerful aspects of group structure, other variables have also been shown to be important predictors of group performance outcomes. However, the effects of these variables are often mediated by the three aforementioned factors. One of the most consistent predictors of group performance is member ability—in terms of both amount and diversity. For example, on intellectual tasks, increasing the average ability of the members will increase the probability of the group's solving the problem correctly. This follows logically from the fact that starting with members of higher ability increases the likelihood that at least one or two members of the group can solve the problem. Diversity of member expertise seems to affect performance in two separate ways. First, greater diversity increases the number and types of options brought up during group discussion. In addition, greater diversity can lead to greater conflict, which tends to increase discussion and prevents early consensus on less than optimal alternatives.

Probably one of the most widely studied variables in relation to groups has been "group cohesiveness"—the sum total of forces keeping the group together. This can stem from social identity, need fulfillment, or general attraction among the group members. Originally, most theorists thought that highly cohesive groups should perform better than noncohesive groups, but the empirical results generally do not support this assertion. Highly cohesive groups are typically more motivated and more committed to the goals of the group. However, if maximizing performance is not one of the group's goals, cohesiveness can actually inhibit group performance. In addition, Irving Janis's seminal work on groupthink (Victims of Groupthink, Boston, 1972) showed that high cohesiveness can lead to early consensus and a lack of critical evaluation within the group.

Status is also an important aspect of group structure. Status is often a function of the norms and roles associated with the various group members. For example, the leadership role affords greater status and more influence to the person who fills it. Leaders tend to speak more, offer more suggestions as well as ask more questions, and are spoken to more often than other members of the group. Ability or expertise can also increase a person's status within the group. However, status can also accrue to an individual for irrelevant reasons. Work on Expectation-States Theory (e.g., C. Ridgeway, in E. Lawler [Ed.], Advances in Group Processes, Vol. 1, Greenwich, CT, 1984) has argued that characteristics such as gender and race, which are correlated with status in many societies, can set up status-relevant expectations within a group that have no relevance to the specific group tasks or goals. Status within a group can also be increased by conforming to group norms. However, group leaders (who are already of high status) are sometimes expected to violate norms in order to move the group in new and innovative directions.

A key aspect of groups is that members must be able to interact and communicate with one another. However, interaction and communication can have both
positive and negative effects. For example, early work by Marvin E. Shaw (in L. Berkowitz [Ed.], Advances in Experimental Social Psychology, Vol. 1, New York, 1964) showed that centralized communication networks (in which communication flows mainly to one central member) are more efficient for simple tasks, but they also decrease the satisfaction of noncentral members. In addition, work on brainstorming groups (groups attempting to generate creative ideas) has found that interpersonal interaction, which was originally thought to increase both the number and creativity of ideas, actually inhibits performance relative to noninteracting groups. The main reason behind the decreased performance seems to be production blocking: as one member shares his or her ideas, other members must listen and cannot think of new ideas or share the ones they already have. However, new advances in technology are changing the basic notions behind what is meant by group interaction and communication. Because of advances such as electronic mail and video conferencing, group members no longer need to be in the same place in order to work as a group. Recent research has shown that production blocking can be attenuated by using computer-mediated brainstorming groups. Group members can continue typing in new ideas while the ideas generated by other members appear in a separate part of the computer screen. It is quite likely that many aspects of our conceptualizations of groups may change as a function of moving from face-to-face or physical groups to "virtual groups."

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Group Processes

Many definitions of groups have been offered over the years. For our purposes, the prototypical "group" contains a small number of members who interact freely on a wide range of activities, are highly interdependent, and have a remembered past and an anticipated future together (cf. McGrath, 1984). Groups of this sort are a ubiquitous feature of human life because they satisfy several basic needs. For example, groups facilitate child-rearing, acquisition of food and shelter, and defense: they allow members to avoid loneliness and maintain a positive image of themselves; and they help members understand the world they live in and their own capabilities. Although group membership does not always satisfy all of these needs, the rewards of membership cause most people to belong to groups of one sort or another throughout their lives.

The goal of this article is to discuss contemporary trends in group research. Rather than providing a com-