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HOW DIFFERENT TEAM DOWNSIZING APPROACHES INFLUENCE TEAM-LEVEL ADAPTATION AND PERFORMANCE

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This study examined the relative effectiveness of three structural approaches to reducing team size. Seventy-one five-person teams engaged in a simulated interactive task in which the approach to downsizing was manipulated. Results suggest that the structural approaches to reducing team size differentially impact team performance, and this relationship is mediated by how and to what degree teams adapt their task-related behaviors. Moreover, results from this study emphasize the importance of team composition in cases of team downsizing. Specifically, emotional stability and extraversion can help mitigate the negative effects associated with reducing team size.

There are a variety of reasons at multiple levels of analysis why teams might be reduced in size, or downsized, in organizational settings. For example, organizational downsizing initiatives (e.g., layoffs) are a common reason why teams are forced to work with fewer people. In fact, from 2000 to 2003, organizations in the United States engaged in over 28,000 extended layoff or downsizing events (U.S. Bureau of Labor Statistics, 2005). In other cases, organizations may be forced to reduce team size in order to cope with multiple, simultaneous work demands. For example, Thompson and Duffy (2003) recounted how U.S. Army units were potentially too small to handle both military and peacekeeping operations in Afghanistan and Iraq at the same time. This was because unit size had been reduced as a result of personnel being deployed across multiple simultaneous needs. Other research contains the argument that team downsizing should occur because managers tend to "assume that more is better and therefore put too many people on the team . . . and although managers sometimes form teams that are too small to accomplish their work well, the far more common mistake is overstaffing them" (Hackman, 2002: 115–116). In sum, team downsizing occurs in modern organizations for a variety of reasons.

To date, the literature on team size has focused on its implications in static environments. For example, in a between-teams study, Wagner (1995) established that team size impacts degree of cooperation. Gallupe and colleagues (Gallupe, Dennis, Cooper, Valacich, Bastianutti, & Nunamaker, 1992) showed that team size directly impacts the number and quality of ideas generated. In fact, Hackman and Vidmar (1970) concluded from a cross-sectional study that the optimal team size (across teams and settings) was 4.6 members. This static perspective, although valuable, is limited in several important ways. Most notably, static views of team size do not address conceptually how teams should change size over time, nor the implications of these changes for team functioning. Moving from a static perspective on team size to a more dynamic model is essential for understanding these issues and was thus a central purpose and theme of the present study. Specifically, we identify from a structural perspective several ways in which teams can downsize over time and then examine the implications of these structural approaches for adaptive

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behaviors and performance. We also consider how the relative effectiveness of these structural approaches to team downsizing depends on compositional elements within teams. As such, this is the first empirical study that examines the performance implications of reductions in team size.

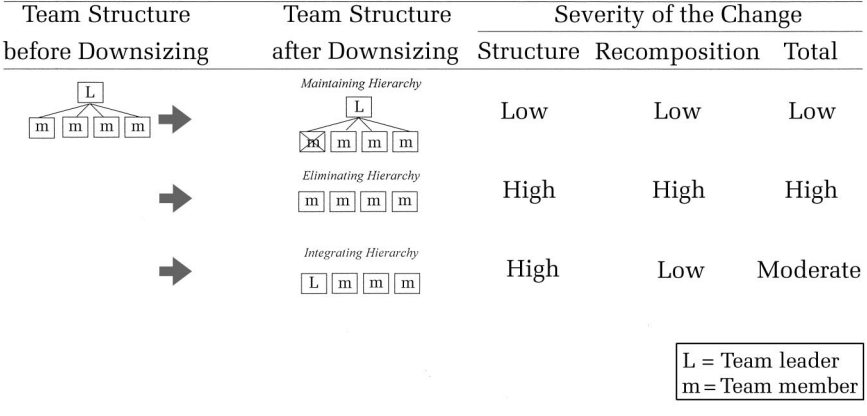
DOWNSIZING IN TEAMS: THREE BASIC STRUCTURAL APPROACHES

To identify the three structural approaches to team downsizing, we draw from literature on organizational downsizing. Cameron, Freeman, and Mishra (1991, 1993) identified and differentiated three approaches to downsizing: (1) workforce reduction strategy, (2) redesign strategy, and (3) systemic strategy. The *workforce reduction strategy* is a simple reduction of the number of lower-level operational employees, involving no consideration of structural differentiation. The *redesign strategy* is downsizing a unit through work redesign and structural change. The *systemic strategy* focuses on changing the way employees approach their work so that the principles of downsizing (e.g., simplification, continuous improvement) are embraced "as a way of life" in the behavioral routines of employees (Cameron, Freeman, & Mishra, 1991: 62). These three downsizing strategies are not mutually exclusive and can be implemented alone or in combination. In the present study, we extend this framework from the organization to the team level to develop three structural approaches to team downsizing. We refer to these three approaches as *maintaining hierarchy, eliminating hierarchy,* and *integrating hierarchy.* Figure 1 identifies the three structural approaches and schematically outlines their operation.

These three structural approaches to team downsizing differentially impact team performance, and these effects are mediated by how teams adapt their task-related behaviors in response to the downsizing. As illustrated in Figure 1, the structural approaches to team downsizing differ on two dimensions: (1) degree of recomposition and (2) degree of structural change. We conceptualize recomposition as changes in membership (e.g., existing members leaving a team). The degree of recomposition is a function of (1) how many membership changes occur in a team and (2) the importance of the members who are affected by these membership changes. Team member importance is determined by how unique a member's contributions to the team are; importance could be a function of unique knowledge, skills, and abilities or the degree to which the individual is a gatekeeper for team functioning. Recomposition that directly affects team members who are vital to team functioning (e.g., a team leader) is a more severe trigger for behavioral change than recomposition that affects team members who are less vital to team functioning. Structural change refers to changes in a team's hierarchical structure (e.g., moving from a very hierarchical structure to a flatter one). Both recomposition and structural change are important because may trigger team adaptation, which we define as team-level behavioral change. Specifically, the degrees of recomposition and structural change are positively related to teams' adaptation of task-related behaviors in response to disruptive events such as downsizing (Bettenhausen & Murnighan, 1991; Gersick & Hackman, 1990).

According to Ilgen and Hollenbeck (1991), behavior can be described along two dimensions: quantitative and qualitative. In this study, we consider the extent to which quantitative and qualitative behavioral change mediate the relationship be-

FIGURE 1
Three Structural Approaches to Downsizing Teams



tween structural approaches to downsizing and team performance. The quantitative dimension of behavior simply refers to the frequency with which a behavior is performed. In other words, teams may continue to exhibit the same types of behaviors, but engage in more of them at a faster pace. Simple increase in the quantity of behaviors, however, is only one form of behavioral change.

Teams may also qualitatively change the types of behaviors they engage in while performing tasks (i.e., they can work differently). In the present study, we consider how teams qualitatively change their approaches toward two important team functions: (1) monitoring their task environment and (2) sharing information among team members. We chose to focus on these two functions because in a hierarchical team structure, the team leader is often responsible for them (Hackman, 1987), and these functions are critical for team effectiveness (Ilgen, Hollenbeck, Johnson, & Jundt, 2005; Marks, Mathieu, & Zaccaro, 2001). In teams with no formal leader, team members are collectively responsible for performing these functions effectively (Cohen, Chang, & Ledford, 1997). Because the structural approaches to downsizing identified here manipulate either the hierarchical structure within a team, team composition, or both, we expect the structural approaches to qualitatively impact the way teams perform these two important functions.

Maintaining Hierarchy

As Cameron et al. (1991, 1993) stated, the workforce reduction approach to downsizing concentrates primarily on reducing the number of operational employees in an organizational unit. This approach, which manifests itself as layoffs, early retirement programs, and buyout packages, focuses on fast implementation and short-term payoffs (e.g., cost reduction). This strategy permits no consideration of the structure of a unit or how work gets done within it. This form of downsizing has also been referred to as pure employment downsizing and, after the initial cost savings, is often associated with severely negative implications for performance at an organizational level (Cascio, Young, & Morris, 1997).

We develop the maintaining hierarchy approach to downsizing teams by extending this workforce reduction approach to the team level. At the organizational level, no change in hierarchical differentiation accompanies a reduction in organizational size; instead, the primary focus is on headcount reduction. At the team level, the analog to this approach would be maintaining the same form of hierarchical differentiation in a team and simply reducing team size by removing one or more lower-level members. The formal team leader maintains his or her role and responsibilities within the team, and the resources and responsibilities associated with displaced team members shift to the remaining team members.

Drawing from the work of Gersick and Hackman (1990), we suggest that this approach to team downsizing should result in fewer adaptive behaviors at the team level. The approach does not alter the hierarchical structure of a team in any way. Moreover, in terms of recomposition, this approach to team downsizing targets only lower-level operational roles within a team. Relative to the leader of the team, the team members who are displaced in this structural approach are less central to team functioning. As a result of the absence of structural change and the relatively low degree of team recomposition, the remaining team members and team leader continue to perform routine functions. For these reasons, the maintaining hierarchy approach provides a minimal trigger for change and therefore should result in relatively little team adaptation. We expect that, relative to downsized teams that experience more significant structural change or recomposition, as is the case with other team-downsizing approaches, maintaining hierarchy teams will not exhibit as much quantitative behavioral change. Similarly, we do not expect these teams to qualitatively change how important team functions are performed because maintaining hierarchy provides much less of an impetus for behavioral change. Given that adaptation is vital to maintaining unit performance in downsizing (Cameron et al., 1991), we expect the maintaining hierarchy approach, because it does not trigger as much quantitative or qualitative behavioral change as other approaches, to negatively impact team performance.

Eliminating Hierarchy

Cameron and colleagues suggested that the approaches to downsizing that they identified—workforce reduction, redesign, and the systemic strategy—were not mutually exclusive and that in fact "the most successful firms implemented all three" (1991: 62). With this view in mind, we develop the eliminating hierarchy approach to team downsizing by considering all three approaches. Although still focused on reducing overall team size, this approach redesigns a team's hierarchical structure and eliminates a central member of the team. Specifically, the leader of a hierarchically differentiated team is removed, thus eliminating any hierarchical differentiation within the team. Further-

more, whereas the team leader had been largely responsible for important team functions such as monitoring the external task environment and facilitating the exchange of information within the team, now the team members are collectively responsible for these functions.

In contrast to maintaining hierarchy, eliminating hierarchy alters a team's hierarchical structure and eliminates a central member (i.e., the team leader). As a result of these changes, the remaining team members are forced to work together in nonroutine ways. Thus, one should observe more adaptive behaviors in teams that employ this approach (Gersick & Hackman, 1990). In quantitative terms, we expect eliminating hierarchy teams to increase their overall effort and collectively adapt to the downsizing by performing more task-related behaviors than teams that employ other downsizing approaches. This is because these teams, with the loss of their leader, will realize that they must exert more effort to maintain team performance. In qualitative terms, we also expect eliminating hierarchy teams to exhibit fundamentally different types of behaviors. Because the team leader is no longer present, the team functions that this person (and position) used to perform must now be fulfilled by the team. To accomplish this, the remaining team members must qualitatively change their behavior in such a way that they can collectively perform these important functions. In line with research at the organizational level (Cameron et al., 1991), we expect teams that employ this approach to engage in significant behavioral change and, as a result, to experience the least amount of performance decline as a result of downsizing.

Integrating Hierarchy

In developing the integrating hierarchy approach, we also extend multiple elements of Cameron et al.'s (1991) framework to the team level. In this approach to downsizing, as in the eliminating hierarchy approach, the hierarchical differentiation in a team is removed. However, this approach does not remove the person who had been the team leader from the team, only the role of team leader. Instead, a lower-level team member is downsized, and the team leader assumes the roles and responsibilities of the displaced team member. Accordingly, the team leader's role changes in such a way that he or she must assume specific operational duties that were not part of the prior leader role. Thus, the team adapts structurally to the downsizing by removing hierarchical differentiation and reallocating roles and responsibilities. Organizations may adopt this structural approach to reduce hierarchical differentiation within themselves while retaining their ability to draw on the perspective and past experiences of people in former leadership positions. The basic principles of this approach are also apparent in recent literature on rotated team leadership, where members systematically move from leadership to peer positions (Erez, LePine, & Elms, 2002).

Because the team leader is retained within a team and only lower-level members are displaced, the integrating hierarchy approach to team downsizing does not affect team composition as much as the eliminating hierarchy approach. Thus, in accordance with Gersick and Hackman (1990), integrating hierarchy is a less severe trigger for behavioral change than eliminating hierarchy. We therefore expect less adaptive behavior in integrating hierarchy teams than in eliminating hierarchy teams. Quantitatively, integrating hierarchy teams should not increase the number of task-related behaviors they perform to the same degree as eliminating hierarchy teams. Qualitatively, because the team leader is still present, it is less likely that integrating hierarchy teams will adapt their task-related behaviors to include different types of behaviors. With the former leader still present, behavioral routines developed while this person was in a leadership position are likely to persist, despite the structural change (Ancona & Chong, 1996; Bettenhausen & Murnighan, 1985, 1991; Gersick & Hackman, 1990). Any potentially positive contributions associated with moving to a less differentiated team structure are negated by the preservation of established behavioral routines that, in essence, help sustain differentiation within the team. Because integrating hierarchy teams will engage in fewer adaptive behaviors, we expect their performance to decline as a result of downsizing.

In sum, we expect teams adopting an eliminating hierarchy approach to downsizing to perform better than teams adopting a maintaining or an integrating hierarchy approach. In fact, eliminating hierarchy teams are expected to realize performance levels that are not significantly different from the performance of teams not subject to any downsizing (our control group). This is our expectation because eliminating hierarchy teams will adapt their task-related behaviors in both quantitative and qualitative ways. Quantitatively, these teams will exert more effort toward the team task than will teams that employ other downsizing approaches. Qualitatively, eliminating hierarchy teams will adapt how they go about performing critical team functions now that their leader is no longer present. The integrating and maintaining hierarchy teams are

less likely to make these same behavioral changes. Thus, we formally hypothesize the following:

Hypothesis 1. Teams employing a maintaining hierarchy or an integrating hierarchy approach to downsizing perform more poorly than teams that employ the eliminating hierarchy approach and teams that do not downsize.

Hypothesis 2a. Quantitative behavioral change mediates the structural approach–team performance relationship.

Hypothesis 2b. Qualitative behavioral change mediates the structural approach–team performance relationship.

DOWNSIZING AND TEAM COMPOSITION

Existing research clearly states that downsizing initiatives can promote, through unwanted job enlargement and increased task demands, feelings of stress and overburden in surviving personnel (Kozlowski, Chao, Smith, & Hedlund, 1993). These feelings of stress, when combined with overly high work demands, can lead to job burnout (Lee & Ashforth, 1996; Maslach, 2003). Job burnout is largely affective in nature, and recent meta-analyses have connected it to the affective states of individuals (Thoresen, Kaplan, Barsky, Warren, & de Chermont, 2003). Since the impact downsizing has on individuals is partly affective (e.g., Brockner, Tyler, & Cooper-Schneider, 1992; Brockner, Wiesenfeld, & Martin, 1995), affective elements of team composition should influence how well teams are able to adapt to downsizing.

The Affective Plane of Personality: Emotional Stability and Extraversion

One affective element of team composition that has received considerable attention is the "affective plane of personality" (e.g., Costa & McCrae, 1980; Watson & Tellegen, 1985). Costa and McCrae (1992) introduced the concept of two-dimensional planes of personality as a way to group nonorthogonal personality factors into theoretically meaningful pairs. The affective plane includes extraversion and emotional stability and "represents an individual's basic emotional style" (Costa & McCrae, 1992: 19). Existing literature on personality at the team level suggests that both emotional stability and extraversion impact team processes and performance (e.g., Barrick, Stewart, Neubert, & Mount, 1998; Beersma, Hollenbeck, Humphrey, Moon, Conlon, & Ilgen, 2003; Porter, Hollenbeck, Ilgen, Ellis, West, & Moon, 2003). We focus here on how these two personality factors—emotional stability and extraversion—impact the relationship between team performance and the three structural approaches to downsizing.

Costa and McCrae (1992) suggested that individuals low on emotional stability have a general tendency to experience negative affective states like fear, sadness, embarrassment, anger, guilt, and disgust. Because these disruptive emotions interfere with individuals' ability to adapt to change, Costa and McCrae (1992) also suggested that individuals who are low on emotional stability are less able than others to adapt to change. In contrast, those high on emotional stability are usually calm, even-tempered, and able to face stressful situations without becoming upset.

A long line of research on team composition and performance has addressed how emotional stability impacts team performance (e.g., Heslin, 1964). For instance, research has suggested higher aggregate levels of emotional stability in a team lead to greater levels of cooperation and prosocial behavior within the team (e.g., Watson & Tellegen, 1985). In addition, emotional stability has been linked to team adaptability in the sense that teams with more emotionally stable members show better adaptability to structural misalignment (Hollenbeck, Moon, Ellis, West, Ilgen, & Sheppard, 2002) and uneven workload distributions (Porter et al., 2003)—both of which are potential problems in downsized teams. For these reasons, emotional stability is likely a key compositional factor in explaining how teams adapt structurally to downsizing.

Similarly, extraversion may also attenuate the potentially negative effects of downsizing in teams. Extraversion incorporates an element of positive affectivity (Costa & McCrae, 1992; Watson & Clark, 1984) in the sense that highly extraverted individuals are prone to experience more positive emotional states (Barrick et al., 1998). In teams, extraversion promotes positive interaction, information exchange, helping behavior, and cooperation among members (e.g., Beersma et al., 2003; Porter et al., 2003), all of which are expected to be important for adaptation to reductions in team size.

The Role of Emotional Stability and Extraversion in Team Downsizing

In accordance with Mischel and Shoda's (1995, 1998) cognitive-affective personality system theory, the degree to which basic dispositional traits such as personality are expressed in a team depends on the situation in which the team operates. In other words, situational features can activate or trigger the enhanced expression of stable personal-

ity traits. We argue here that the three structural approaches to downsizing differ in the degree to which they trigger expression of the affective plane of personality. These differences among the structural approaches to downsizing are due to the severity of change associated with each approach; the least severity is associated with maintaining hierarchy, and the most severity is associated with eliminating hierarchy (see Figure 1).

Maintaining hierarchy makes no change to a team's hierarchical structure and only minimally affects team composition. Integrating hierarchy changes the team's hierarchical structure but only minimally changes team composition. Thus, the overall severity of these changes is low to moderate in comparison to the eliminating hierarchy approach. As a result, teams employing either the maintaining or integrating hierarchy approach experience a minimal trigger for change and will therefore be less likely to recognize a need to adapt. Because these teams are less likely to recognize the need for adaptation, we do not expect the expression of emotional stability or extraversion to be enhanced in any meaningful way. Therefore, the affective plane of personality is expected to have no influence on the performance of teams using a maintaining hierarchy or an integrating hierarchy approach.

In contrast, we do expect the severity of the eliminating hierarchy approach to provide a significant trigger for adaptation. According to Mischel and Shoda (1995, 1998), this trigger for adaptation should activate the enhanced expression of emotional stability and extraversion within a team, thereby positively influencing team performance. Enhanced expression of emotional stability or extraversion in a team will enable it to better cope with the challenges associated with downsizing. For instance, with the loss of a team leader, a team's other members must collectively perform traditional leadership functions such as monitoring the environment, obtaining and reallocating resources, and designing the team's task (e.g., Hackman, 1987; Morgeson, 2005). To effectively perform these functions without a formal team leader, the team must have high levels of coordination and information exchange and a high overall sense of positive energy. Empirical evidence suggests emotional stability and extraversion promote these positive interactions within teams (e.g., Barrick et al., 1998). Thus, we formally hypothesize the following for teams employing an eliminating hierarchy approach to downsizing:

Hypothesis 3a. The tendency for teams to perform more poorly when they do rather than do not employ the eliminating hierarchy approach (as predicted in Hypothesis 1) is weaker when their members score high on emotional stability.

Hypothesis 3b. The tendency for teams to perform more poorly when they do rather than do not employ the eliminating hierarchy approach (as predicted in Hypothesis 1) is weaker when their members score high on extraversion.

METHODS

Research Participants and Task

Research participants were 355 upper-level undergraduate students at a large midwestern university. Average age was 21 years, and 57 percent of the participants were male. Each student was a member of one of 71 five-person teams. All individuals were randomly assigned to teams, and all teams were randomly assigned to experimental conditions (see the section on Manipulations for details on conditions). In return for their participation, each student received class credit and was eligible for a cash prize.

Participants engaged in a dynamic and networked military command-and-control simulation. The task was a modified version of a simulation developed to study team behavior, Distributed Dynamic Decision-Making (DDD). Miller, Young, Kleinman, and Serfaty (1998) and Hollenbeck et al. (2002) describe the DDD task. In the present study, each team engaged in the same two separate, 30-minute simulation exercises. In each exercise, teams were charged with keeping unfriendly "tracks" from moving into a restricted geographic space while allowing friendly tracks to travel throughout it. This task was particularly appropriate for the present study for two reasons: (1) the task enabled team members, after a downsizing event, to collectively share in the removed team member's task responsibilities, and (2) the task required all team members to coordinate with each other the downsizing.

All individuals and teams, regardless of experimental condition, received the same training on the simulation. This training consisted of two separate modules. First, all participants watched a 15-minute introductory video. Second, they had hands-on instruction and time to practice all of the possible tasks in the simulation. This second module lasted approximately 45 minutes and allowed participants to learn the basic mouse movements and operations associated with all the possible tasks.

After team assignment, each participant was also randomly assigned to a team role: leader or member. Each team had one leader and four members. Each team member controlled four vehicles (assets) that could be launched and used to monitor a geographic space, identify tracks as friendly or unfriendly, and properly engage and disable unfriendly tracks. Of 12 unique tracks, 3 were considered friendly and 9 were considered unfriendly. These tracks differed in terms of their speed of movement and requirements for disabling. Like the other team members, the team leader could identify tracks as friendly or unfriendly.

However, the team leader had several unique abilities that other team members did not have. First, whereas the vision of each team member was limited to his or her own geographic space, the team leader was able to view any part of the geographic space that was viewable by another team member. This enabled the team leader to monitor the overall task environment for the team. Second, only the team leader was able to reallocate assets among the team members and to assume control over team members' assets. This ability enabled the team leader to redistribute assets according to workload within the team as well as to control assets when needed. In the experimental condition in which the team leader position was eliminated (i.e., under eliminating hierarchy), the team members had to share information with each other about what they were seeing and what assets they needed since no one other than the leader ever had the ability to see the entire geographic space. Thus, significant interaction (i.e., information sharing or other ways of coordinating) among team members was needed when the team leader position was eliminated. This increased level of interaction was needed, also, in the integrating hierarchy condition, which eliminated the leader role and reassigned the leader to the role of peer.

The team task employed in the present study is additive for two reasons. First, each team member contributed to team output in a meaningful way, unlike in a "disjunctive task" (e.g., problem solving), in which a team's best member determines its output. Our experimental task also differs from a "conjunctive task" (e.g., mountain climbing), in which a team's weakest member determines the team's output. According to Steiner (1972), the idea that each team member makes a meaningful contribution to team output suggests the task is additive. Secondly, team performance in this study was operationalized in additive terms (i.e., as the total number of effective and ineffective engagements), and prior research suggests an additive approach is warranted when the dependent variable of a study is also operationalized in additive terms (e.g., Porter et al., 2003).

Manipulations and Measures

Downsizing approach. All teams were randomly assigned to one of four conditions. These conditions varied in the approach used to downsize the team from five to four members. In the control condition, teams experienced no downsizing and thus performed the second simulation with the same composition and structure they had in the first simulation. In the other three experimental conditions, we downsized teams between the first and second simulation using one of the three approaches to downsizing identified earlier.

In the first experimental condition, which we refer to as "maintaining hierarchy," a single team member was displaced from the team, and this individual's assets were redistributed to the remaining team members in such a way that the remaining team members collectively shared the operational responsibilities originally assigned to the displaced team member. The team leader remained in the leadership role and had no additional operational capabilities or responsibilities. Thus, in this condition, no structural change was made in response to the downsizing. In the second experimental condition, labeled "eliminating hierarchy," the team leader was displaced from the team, thereby eliminating the hierarchical structure of the team. Although the operational scope of team members was left unchanged, they needed to expand their roles to include performing many of the functions previously performed by the leader. The latter description applies also to the third experimental condition, labeled "integrating hierarchy," since this condition eliminated the leader role (and hence the functions previously performed by the leader); however, unlike in the eliminating hierarchy condition, the former leader remained in the team but had duties previously assigned to a displaced lower-level member.

Recall that the leader role had unique capacities to monitor the entire geographic space and transfer assets among team members; therefore, in the absence of the former leader (in the eliminating hierarchy condition) and in the absence of a formal leader role (in the integrating hierarchy condition), the team had to collectively monitor the task environment and reallocate tasks when workload distribution problems arose. In other words, in each of these experimental conditions, no single team member could assume the leader role (e.g., view the entire geographic space, transfer assets); rather, the

team as a collective unit had to perform these functions.

Affective orientation. We measured emotional stability and extraversion via the short form of the Revised NEO Personality Inventory (Costa & McCrae, 1992). Each of these personality factors was measured with 12 items, and the corresponding reliability coefficients were .80 and .79, respectively. We aggregated individual team members' scores on each personality factor into an overall mean-level score for the team. Our choice to use the team's mean is consistent with research indicating that the appropriate measurement technique for configural unit properties such as personality depends on a team's task (e.g., Barrick et al., 1998; Barry & Stewart, 1997; LePine, Hollenbeck, Ilgen, & Hedlund, 1997; Moynihan & Peterson, 2001; Porter et al., 2003). Drawing on Steiner (1972), this research suggests that an additive approach is appropriate when a team's task is additive.

Adaptive behaviors. Both quantitative and qualitative behaviors were composite variables that were captured by the simulation. *Quantitative behaviors* were measured as a combination of the total number of times teams (1) launched their assets and (2) identified tracks as either friendly or enemy targets. These behaviors reflect a general level of activity or effort on the part of a team and capture how much effort it was directing at task-related behaviors. Launching a large number of assets and identifying tracks requires no real thought, decision making, or coordination of efforts among team members, as it is simply a function of how fast and how long participants can manipulate the software with their mice. Thus, if one sees an increase in the level of these behaviors from time 1 to time 2, it is direct evidence that the teams were working faster and harder, but not necessarily any differently in terms of types of behaviors. We standardized and averaged these two team behaviors to create the scores.

Qualitative behaviors were a combination of the total numbers of times team members assisted other team members by (1) identifying tracks inside other team members' geographic areas and (2) electronically sharing identification information related to the tracks. These behaviors reflect a qualitative change because they do require thought, decision making, and coordination among team members. In teams with a formal leader position (all teams at time 1), the leaders were best able to perform these functions. In teams without a formal leader position (the eliminating and integrating hierarchy teams at time 2), the team members were collectively responsible for these behaviors. Thus, if team members increased the number of these behaviors from time 1 to time 2, it was direct evidence that they were working differently than they had been at time 1. As with the quantitative behaviors, we standardized and averaged these two team behaviors to create the scores.

Team performance. Performance was a composite variable that was captured by the simulation as the total number of effective and ineffective engagements. In the context of the simulation, an effective engagement occurred when a team successfully disabled an enemy track by deploying vehicles with the appropriate power levels. An ineffective engagement occurred when the team either disabled a friendly target or disabled any track that was outside of the restricted area. We reverse-coded the number of ineffective engagements so that higher numbers indicated better performance. Team performance was computed by standardizing and averaging these two scores.

Procedures

Each participant was scheduled for a three-hour session. When a participant arrived, we first administered the Revised NEO Personality Inventory (Costa & McCrae, 1992) to measure emotional stability and extraversion. Then, each participant was randomly assigned to a five-person team, and teams were randomly assigned to one of the four conditions: (1) control, (2) maintaining hierarchy, (3) integrating hierarchy, or (4) eliminating hierarchy. Roles within the teams were randomly assigned. Once the teams were formed, each team was trained together for approximately 60 minutes. After the training was complete, the trainer informed the team of a performance-based incentive. Teams had an opportunity to earn up to $50 based on their overall team performance in the simulation. Then, the teams were granted approximately 5 minutes to discuss their strategies for the simulation. The teams then performed the first of two 30-minute simulations. After the first simulation, the trainer informed all of the teams in the experimental conditions (maintaining hierarchy, integrating hierarchy, and eliminating hierarchy) that a team member would be removed prior to the second simulation.

The trainer made clear that the manipulation was for research purposes only but provided no further explanation as to why the person was being removed from the team. The trainer did, however, indicate that the remaining four team members should think about and discuss how the team might adapt to such a change. For the control group, where no team member was removed, the trainer indicated that the team should discuss how it

might improve its performance between the first and second simulations. Teams were granted approximately 5 minutes to discuss their performance strategies between simulations. Teams then performed the second simulation. After completing the second simulation, teams were thanked for their participation and rewarded if appropriate.

In the three experimental conditions, the individual who was removed from the team was escorted away from the team and asked to complete a 30-minute, individual-based version of the DDD task. This task was completed in a room separate from where the team was performing their task.

Data Analysis

The research design and analyses employed in this study were all conducted at the team level. To examine the impact of each structural approach to downsizing on team performance, we conducted a hierarchical regression analysis. To begin, we dummy-coded the downsizing approaches with the control group as the referent. With team performance from the second simulation as our dependent variable, we then entered team performance from the first simulation in step 1. By entering prior performance as step 1, we controlled for between-team performance differences prior to the downsizing manipulation. We then entered the dummy codes for downsizing approach in the second step of the equation. By entering all dummy codes in the second step, we were able to examine the independent effects associated with each downsizing approach; with these variables entered simultaneously, the regression weights associated with each approach to downsizing reflect the mean difference in performance between each downsizing condition and the control group (Cohen & Cohen, 1983).

The mediation and moderation hypotheses were tested by extending this hierarchical regression analysis to include additional steps. To examine the mediating effects of behavioral change, we used Baron and Kenny's (1986) method. To test the moderating effects of emotional stability and extraversion, we included a third and fourth step in the hierarchical regression analysis. For each personality factor, we created an interaction term by multiplying the dummy codes by the mean rating for each personality factor. We entered the mean scores on the factors in the third step and the interaction terms in the fourth step of the equation.

RESULTS

Table 1 presents the means, standard deviations, and correlations of all variables measured or manipulated in this experiment. As noted, variance on all measured variables was adequate, and the intercorrelations among variables were modest.

Hypothesis 1 predicts that teams in the control and eliminating hierarchy conditions will perform better than teams in either the integrating or maintaining hierarchy conditions. As indicated in step 2 of Table 2, teams in the maintaining ($\beta = -.37$, $p < .01$) and integrating ($\beta = -.28$, $p < .05$) hierarchy conditions performed significantly more poorly than teams who did not experience any downsizing (control). The performance of teams in the eliminating hierarchy condition was not significantly different than that of teams in the control condition ($\beta = -.01$, n.s.), suggesting that these teams performed significantly better than teams in either the integrating or maintaining hierarchy conditions. A

TABLE 1
Descriptive Statistics and Correlations[a]

Variable	Mean	s.d.	1	2	3	4	5	6	7	8	9	10
1. Maintaining hierarchy	0.26	0.44										
2. Eliminating hierarchy	0.25	0.44	−.33*									
3. Integrating hierarchy	0.24	0.43	−.35*	−.32*								
4. Emotional stability	3.45	0.24	.01	−.03	−.05							
5. Extraversion	3.64	0.21	−.04	−.23*	.15	.28*						
6. Time 1 quantitative behaviors	0.00	0.73	−.16	−.16	.08	−.08	.07					
7. Time 2 quantitative behaviors	0.00	0.79	−.40**	−.05	−.21	−.06	.10	.54**				
8. Time 1 qualitative behaviors	0.00	0.73	−.05	−.06	.09	.00	.20	.05	.05			
9. Time 2 qualitative behaviors	0.00	0.72	−.31**	.15	−.10	.01	.12	.01	.33**	.63**		
10. Time 1 performance	0.00	0.70	−.18	.02	.17	−.10	.01	.30**	.02	−.03	.02	
11. Time 2 performance	0.00	0.67	−.31**	.21	−.13	.09	−.03	.02	.41**	−.21	.10	.13

[a] $n = 71$ teams.
* $p < .05$
** $p < .01$

TABLE 2
Results of Hierarchical Regression Analysis for Team Performance[a]

Independent Variables	Main Effects	Mediated Effects	Moderated Effects
Team performance, time 1	0.10	0.11	0.08
Maintaining hierarchy[b]	−0.37**	−0.12	2.34
Integrating hierarchy[b]	−0.28*	−0.07	−7.54**
Eliminating hierarchy[b]	−0.01	0.17	−3.43
Quantitative behaviors		0.36*	
Qualitative behaviors		−0.11	
Emotional stability			−0.12
Extraversion			−0.13
Maintaining hierarchy × emotional stability			−0.16
Integrating hierarchy × emotional stability			1.40
Eliminating hierarchy × emotional stability			4.26*
Maintaining hierarchy × extraversion			−2.59
Integrating hierarchy × extraversion			5.87*
Eliminating hierarchy × extraversion			−0.87
R^2	.16	.25	.37
F	3.13*	3.48**	2.78**

[a] $n = 70$ teams.
[b] Dummy-coded variable: control = 0; other = 1.
* $p < .05$
** $p < .01$

one-tailed significance test with eliminating hierarchy as the comparison condition confirmed that teams in this condition did indeed perform significantly better than teams in both the maintaining hierarchy condition ($\beta = -.37$, $p < .01$) and teams in the integrating hierarchy condition ($\beta = -.27$, $p < .05$). This step explained approximately 14 percent of the incremental variance in team performance at time 2. Thus, Hypothesis 1 was fully supported.

Hypothesis 2a states that quantitative changes in behaviors will mediate the relationship between the downsizing conditions and team performance, and Hypothesis 2b states that qualitative changes in behaviors will mediate the relationship. We tested these hypotheses using Baron and Kenny's (1986) method, which requires that three conditions be met for mediation to be inferred: (1) the independent variables must be significantly related to the dependent variable, (2) the independent variables must be significantly related to the proposed mediators, and (3) the previously significant relationship between independent and dependent variables decreases and becomes nonsignificant when the mediator is controlled for. As noted in the test of Hypothesis 1, the first of these conditions was met.

With respect to the second condition, we regressed the time 2 quantitative and qualitative behaviors on the dummy codes for experimental condition. We also controlled for the time 1 quantitative and qualitative behaviors to remove any between-teams variance that existed prior to the downsizing. In terms of quantitative behaviors, maintaining hierarchy ($\beta = -0.64$, $p < .01$), integrating hierarchy ($\beta = -0.59$, $p < .01$), and eliminating hierarchy ($\beta = -0.39$, $p < .01$) teams engaged in significantly fewer of these behaviors than the control teams. In terms of qualitative behaviors, both the maintaining hierarchy ($\beta = -0.30$, $p < .01$) and the integrating hierarchy ($\beta = -0.29$, $p < .01$) teams engaged in significantly fewer of these behaviors than the control teams. The eliminating hierarchy ($\beta = -0.13$, n.s.) teams were not significantly different from the control teams on qualitative behaviors.

Regarding the third condition for mediation, we regressed time 2 performance on time 1 performance, the dummy codes for experimental conditions, and the quantitative and qualitative behaviors. The effects of both the maintaining hierarchy and integrating hierarchy dummy codes dropped to nonsignificance. The maintaining hierarchy effect decreased from −0.37 ($p < .01$) to −0.12 (n.s.), and the integrating hierarchy effect decreased from −0.28 ($p < .05$) to −0.07 (n.s.). The time 2 quantitative behavior variable remained significant ($\beta = 0.36$, $p < .05$), but the time 2 qualitative behavior variable did not ($\beta = -0.11$, n.s.). Thus, the quantitative—but not qualitative—behaviors fully mediated the effects of downsizing condition on time 2 performance as expected, thereby supporting Hypothesis 2a but not Hypothesis 2b.

In Hypotheses 3a and 3b, we examined the impact of team-level emotional stability and extra-

version on the performance of teams adopting an eliminating hierarchy approach to downsizing. Specifically, Hypothesis 3a predicts that downsizing teams according to the eliminating hierarchy approach will work especially well when a team scores high on emotional stability. The significance of the interaction term in Table 2 and the illustration in Figure 2 support this hypothesis ($\beta = 4.26$, $p < .05$). Hypothesis 3b predicts a similar effect for extraversion. However, as noted in Table 2, this hypothesis was not supported in the current data ($\beta = -0.87$, n.s.). Another finding, not formally hypothesized in this study, was that highly extraverted teams downsized via the integrating hierarchy approach significantly outperformed teams in the same condition who scored low on extraversion (see Figure 3). A potential explanation for this is that higher levels of extraversion enabled integrating hierarchy teams to recognize via interpersonal communication the need for team adaptation. Overall, the interaction terms between the personality factors and the structural approaches to downsizing accounted for over 19 percent of additional variance in team performance.

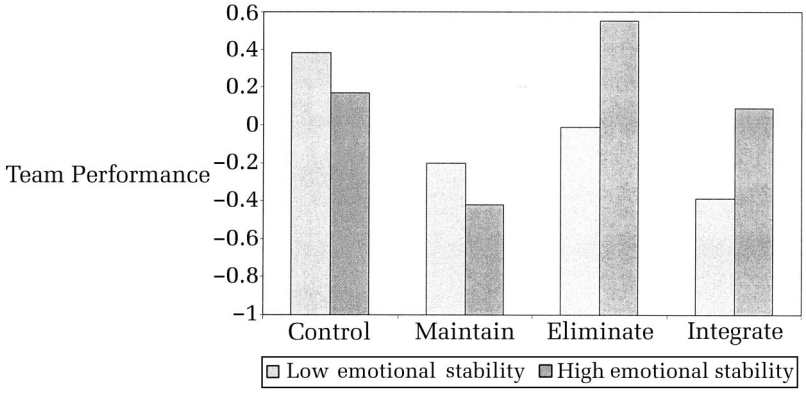
DISCUSSION

Disruptive events are clearly one impetus for behavioral change and adaptation in teams (Louis, 1980). However, not all disruptive events impact team functioning in the same way (Morgeson & DeRue, 2006). Thus, it is important that we examine specific types of disruptive events and their unique implications for team adaptation and performance. In the present study, we considered team downsizing as one type of disruptive event and focused specifically on how three structural approaches to team downsizing impacted adaptive behaviors and performance in teams. The findings from this study have several important implications for how teams respond and adapt to disruptive events such as downsizing.

Implications

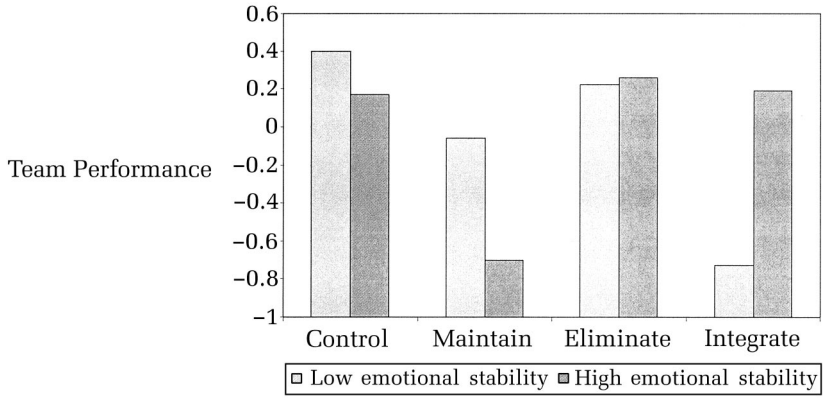
One such implication is that the approach used to implement team downsizing has considerable influence over how teams adapt to the downsizing and ultimately team performance. In our findings, the fate of a team leader, in terms of both person and position, seems to be an important driver of this relationship. When the team leader (both person and position) is eliminated from a team, as is the case with eliminating hierarchy, the jolt to team functioning is sufficiently disruptive to prompt the team to recognize the need for and engage in behavioral change. Specifically, in this study, we found that eliminating hierarchy teams adapted to the downsizing by engaging in quantitative behavioral change and increasing the effort they directed at task-related behaviors. This pattern contrasts with that observed with downsizing approaches that maintained the leadership hierarchy or integrated the leader into a team. These alternative approaches to team downsizing (maintaining hierarchy and integrating hierarchy) do not employ the same degree of recomposition and, as a result, teams employing either a maintaining or integrating approach to team downsizing do not engage in the behavioral changes necessary to effectively adapt to it. Prior research has not addressed how the fates of team leaders within the context of disruptive events shapes teams' adaptive behaviors and performance, so this is one way in which our study extends existing theory and research. This finding also has important implications for how

FIGURE 2
Effects of Emotional Stability on Structural Approaches to Downsizing[a]



[a] High and low emotional stability represent one standard deviation above and below the mean, respectively.

FIGURE 3
Effects of Extraversion on Structural Approaches to Downsizing[a]



[a] High and low extraversion represent one standard deviation above and below the mean, respectively.

team downsizing is managed in organizations. Our results suggest that managers should employ approaches to team downsizing that involve both structural change and recomposition. If a downsizing approach does not involve both structural change and recomposition, teams are less likely to adapt to the disruption, and managers will need to find some way to actively intervene and facilitate the necessary team adaptation. Otherwise, team performance will suffer from a lack of adaptation.

Another finding of this study with implications for how teams respond to disruptive events is that the affective plane of personality, especially team-level emotional stability, enables teams to better adapt to disruptions. The downsizing literature offers little guidance regarding how compositional factors such as personality impact postdownsizing outcomes. Existing literature on team adaptation, however, has suggested that team compositional factors such as personality can influence teams' adaptive capacity (LePine, 2003). Our study extends this prior research in at least two ways. First, we know surprisingly little about how the affective plane of personality impacts team adaptation. Our findings suggest that the affective plane is a key compositional factor that impacts teams' ability to adapt to disruptive events. Second, existing research on team adaptation and composition does not address how compositional factors interact with a team's approach to adaptation. In our study, we show that the affective plane of personality impacts team adaptation and performance differently depending on the team's approach to downsizing.

Specifically, our findings indicate that team-level emotional stability enhances the performance of eliminating hierarchy teams only. One potential reason why emotional stability enhanced performance only under the eliminating hierarchy approach is that losing their leader, both the person and the position, was the most disruptive downsizing event for the studied teams, and teams comprised of members who were emotionally stable were the best equipped to deal with this disruption. From a managerial perspective, although organizations can rarely predict truly disruptive events, our study suggests that they can prepare in advance for events such as downsizing by composing teams that are well suited for dealing with disruption. Emotional stability is one such factor that managers should use in team selection processes to enhance teams' adaptive capacity.

This study also contributes to understanding of how teams adapt to disruptive events by decomposing behavioral change into different types of team behaviors. Prior literature on team adaptation has focused mostly on what factors prompt team adaptation, directing much less attention at precisely what types of team behaviors are being adapted in response to disruptive events. Drawing from Ilgen and Hollenbeck (1991), we extended existing theory on team adaptation by decomposing behavioral change into two types of team behaviors (quantitative and qualitative) and then looking at how the adaptation of these different types of behaviors impacts team performance.

This distinction of quantitative and qualitative team behaviors produces a new set of questions for existing and future research on team adaptation—namely, how are teams adapting (quantitatively or qualitatively), and what are the implications for team performance if teams adapt quantitatively but not qualitatively, or vice versa. This study found that disruptive events led to quantitative behavioral change but not qualitative behavioral change. It is possible, however, that other conditions or types of disruptive events could lead some teams to

make qualitative changes. Future research should seek to identify which conditions or disruptive events facilitate each type of behavioral change. In the present study, quantitative but not qualitative behavioral change explained differences in team performance. Over long time periods, however, quantitative behavioral change has its limits, because people can only work harder and faster for so long. This is evident in Trottman's (2003) account of how Southwest Airlines' flight attendants were only able and willing to expend high levels of effort for a certain period of time before they demanded qualitative changes in how work was accomplished. Over long time periods, qualitative behavioral change may become a more important factor in explaining team performance. By distinguishing between quantitative and qualitative behavioral change, we offer team adaptation scholars a theoretical framework for decomposing the notion of behavioral change into different types of team behaviors and exploring these issues. We also offer managers a new lens through which they can view team adaptation. Specifically, not all types of behavioral change are equally effective, and managers must learn how to identify and then facilitate the appropriate type of behavioral change given the needs and constraints of their organization.

Limitations

Several limitations of this study should be noted. First, a common limitation of laboratory studies is associated with the external validity of the findings. Participants in the present study were undergraduate college students who were reasonably homogeneous in terms of demographic characteristics and work experience. Therefore, we cannot be certain that our findings generalize to different populations. However, one needs to keep the nature of the research question in mind when assessing the relevance of external validity (Berkowitz & Donnerstein, 1982). With regards to the present study, there is no apparent reason why the downsizing principles (Cameron et al., 1991) we extend from the organization to the team level would not hold in this specific context.

Second, the design of the task used in this study presents several limitations. The task was designed for completion by four or five team members. In organizational settings, downsizing a team might preclude their accomplishing certain tasks, and our study would not apply to this type of task. In other words, we assumed here that the task could be done with the knowledge and skills that remained in each team after the downsizing. In addition, the task used in this study was additive, and thus our findings may not generalize to disjunctive or conjunctive team tasks. For example, downsizing by removing a team's best member would severely limit the team's ability to perform a disjunctive task Finally, in the maintaining and integrating hierarchy approaches to downsizing, the role and responsibilities of the displaced team member were either redistributed to the remaining team members or assumed by the team leader. In the present study, the task responsibilities of the displaced team member were simple enough for redistribution to occur. However, if this role required an exceptional level of expertise or experience, our findings might not generalize. Future research that examines our team downsizing model using different types of task situations would be noteworthy.

Finally, this study documented that different structural approaches to downsizing result in different performance outcomes because of the impact they have on behavioral change. This study does not, however, address the question of why some disruptions to team functioning (such as eliminating hierarchy) are better at triggering team adaptation than are other forms of disruption (such as integrating or maintaining hierarchy). Existing theory suggests this difference arises because of the structural and compositional changes associated with the eliminating hierarchy approach, but we did not specifically examine whether these objective features of the approaches to team downsizing align with individuals' perceptions of severity, nor did we empirically address how individuals' perceptions of severity influence team functioning. Future research that tests our assumptions about how the team downsizing approaches differ in terms of severity and disruption would make a noteworthy contribution to the literature. This study also did not address whether teams adapt to disruptive events by means of explicit within-team discussion and planning or by means of implicit, instinctive adaptation of behaviors to the new environment. To address this issue, future research should differentiate among disruptive events that trigger team adaptation on the basis of whether their impact occurs via explicit processes such as information sharing and planning or via implicit, unspoken coordination among team members. Insights from such research would add clarity to understanding of the processes through which team adaptation occurs.

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