Team resilience:
How teams flourish under pressure

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INTRODUCTION

Imagine sharing a very small living and work area with several people for 27 months, never being allowed to leave, with uncertain and lagged communication with "headquarters," and where any damage to your work environment could be catastrophic. This is the scenario actively being planned by NASA (National Aeronautics and Space Administration): to send a team to Mars in a small capsule, with all the attendant communication lags and dangers. In our future-looking research with NASA on such Long Duration Space Mission teams, we have focused on a team-level quality that we believe to be crucial for such missions: *team resilience*. In this article we apply what we have learned from our work with NASA, and with other high-risk teams, to business teams.

Of course, most business teams do not operate under such extreme, confined conditions. Nonetheless, many teams in organizations undergo challenges where resilience is needed to maintain effectiveness and well-being. Certainly, this is true for teams where safety or urgency is key. For example, we've worked with firefighting and oil exploration teams; surgical and other medical teams; emergency response teams; and law enforcement and military teams. Team resilience is clearly essential in those settings.

But we have also worked with corporate leadership, project, manufacturing, technology, and customer service teams, and have come to recognize that resilience can be important for almost any business team, even when physical safety is not an issue. Challenges can diminish the ability to accomplish goals and tax the cohesion of virtually any team; so almost any team can benefit from greater resilience.

Operating from the conviction that team resilience is important in most settings, in this article we: define the construct, distinguishing it from individual resilience; discuss how stress and pressure affects teams and what a healthy, resilient team looks like; provide 40 specific behaviors that resilient teams demonstrate; and offer recommendations for building team resilience in any type of team.

WHAT IS TEAM RESILIENCE?

In a general sense, resilience is the capacity to withstand and recover from challenges, pressure, or stressors. Observable only when challenges occur, resilience operates at both the individual and team level. Individual resilience, however, is not synonymous with team resilience.

Individual Resilience

Extensive research shows that some people are able to recover from severe stress relatively quickly and completely. For example, some children come from very difficult environments but make the transition to adulthood without the lasting problems that seem to plague their peers. Some combat soldiers returning from the Vietnam and Gulf wars have not displayed the expected post-traumatic stress disorder (PTSD) symptoms, despite having undergone traumatic experiences. Among your own acquaintances may be people who you feel have weathered deep or long-lasting challenges exceptionally well.

Such individual resilience has multiple sources. First, resilience is enabled by personal psychological characteristics, such as possessing a positive attitude, ability to forgive, internal sense of control, cognitive flexibility, emotional

"toughness," realism, and the courage to face one's own fears. These characteristics allow an individual to avoid being mired in a negative situation—instead, he or she is able to face the challenge, work to change it in adaptive ways, construct a positive understanding of it (e.g., frame the situation in a way that gives a sense of control over it), or simply "let it go." Second, a person's level of physical durability and fitness can influence the ability to cope with stress. This is because both physical and mental reserves shrink when we are tired; the less fit tire more easily and are simply more sensitive to stress. For example, blood serum corticosteroid levels are higher for the less fit following an intense, stressful event. Third, social support is determinative of individual resilience. Having ample, active sources of emotional and material support helps. These three factors (psychological, physical, and social) are closely related, which is why, for example, psychiatrists are more likely than ever before to seek to understand their patients' support network.

Because each of the three foregoing enablers of resilience are malleable to different degrees, it is possible for individuals to become more resilient—as the increasing number of programs for training personal resilience demonstrates. This is good news! While we may not be able to change certain stable personality traits or environmental conditions easily, we can work to maximize our resilience within whatever natural psychological, physical and social limits we find ourselves.

Team Resilience

Much less research attention has been paid to team level resilience than to individual resilience. But it is important also to turn the light of theory and research onto team resilience because:

- Teams are ubiquitous in the working world;
- Most teams will face challenges that can drain resources, adversely affect performance, and diminish team cohesion and team member well-being;
- In challenging environments, reliable and sustainable team performance and well-being is only possible when the team is resilient;
- A group of resilient individuals does not make a resilient team;

- Teams can be prepared in ways that augment their resilience.

The fact that teams are ubiquitous in the working world is fairly well known. Over the past three decades, the use of teams in organizations has steadily increased, and it seems this trend will continue for the foreseeable future, impelled as it is by a greater appreciation of the need for collaboration and by the increasing use of technology that supports such collaboration. In our work, we have seen teams in all business sectors face challenges; while these are rarely catastrophic, they are often serious enough to impair performance and cohesion. Many teams can make it through an initial challenge or two, but only resilient teams can sustain performance and morale over time.

It is very important to note that assembling a group of resilient individuals will not necessarily yield a resilient team. A team comprised of highly resilient individuals could still suffer communication breakdowns or disputes about leadership, lack a shared mental model about how to work together, or have members who are unwilling to monitor each other's performance or back each other up when necessary. Indeed, team members who are high in both ability and psychological "hardiness" may, perhaps precisely because of their past solo successes, operate with less regard for other team members or the team.

Based on our research, we define team resilience as the capacity of a team to withstand and overcome stressors in a manner that enables sustained performance; it helps teams handle and bounce back from challenges that can endanger their cohesiveness and performance.

TEAM CHALLENGES THAT REQUIRE RESILIENCE

Challenging events and circumstances place stress on individuals and on team processes. There are numerous challenges that can impact a team and test its resilience. Table 1 below lists some of these.

Team challenges such as those noted above can be broadly distinguished as chronic or acute. Chronic challenges are difficult circumstances of an ongoing or long-lasting nature. Such challenges are damaging because their impact can accumulate over time, even when they are not particularly intense. Examples of chronic team challenges include a noisy

Table 1 Some Common Team Challenges That Require Resilience.

• Difficult assignments	• Hazardous work	• "Crisis" events
• Time pressure	• Angry/upset customers	• Constant pressure, even if low-level (e.g., work is never complete)
• Insufficient resources	• Interpersonal conflicts within team	
• Conflict with people outside the team	• Lack of control	• Changes in team membership
• High consequence work (e.g., safety, critical planning)	• "Missing" team members (e.g., vacation, ill)	• Unclear team roles
		• Ambiguity of direction/goals
• Challenging conditions (e.g., noise, lighting, proximity to others)	• Inadequate work output by one or more team members	• Multiple simultaneous smaller challenges
	• Poor results	

work environment, ambiguous team roles, or a lingering personality conflict. Such challenges can be insidious, in that they may not be recognized or, if recognized, not considered important enough to address. For example, in some teams, chronic exposure to low-level demands (e.g., ambiguity about goals, lack of clarity in role assignments) can drain a team's "battery," jeopardizing cohesion and performance. A serious problem with chronic stressors is that they often result in a "normalization of deviance," or the gradual acceptance of lower performance. Like individuals, teams subject to persistent, low-level stressors can wear down, drift toward lassitude, suffer poor cohesion, and ultimately become unready to handle subsequent challenges. For example, flight attendant teams are notoriously subject to the chronic stresses of travel, arduous schedules, and difficult customers. Readers will be familiar with the Jet Blue flight attendant who cursed the passengers, grabbed two beers, and slid down the escape slide. This disruptive event was not simply the result of a single instance of stress, but of the on-going chronic stressors that can drain a team.

In contrast to chronic challenges, acute challenges have a sudden or rapid onset; they are short-lived but typically more intense than chronic challenges. Some examples of acute stressors are: an irate customer, a sudden loss of resources, or a radical increase in workload. A dramatic example of an acute stressor was a lightning strike on a Phillips production plant, forcing numerous teams both at Phillips and their customers to scramble to ensure an adequate supply of computer chips.

What happens to a team that is not resilient when it experiences the onset of such an acute challenge? Research indicates that team members can lose their sense of the team, and become more individualistic and self-focused. Under such conditions, team dynamics tend to fray, and as a result, decision-making, coordination, and ultimately performance will suffer. Similarly, within a team under pressure, lower-status team members tend to become hesitant about communicating their observations and suggestions, which has led to severely negative outcomes. In medical teams and military flight crews, the results at time have been fatal. In a corporate team, the consequences may be less severe, but profitability or customer satisfaction may suffer.

HOW RESILIENT IS YOUR TEAM?

In our definition of resilience, we describe it as a *capacity* of the team—something a team may possess, whether or not a challenge is present. However, in practice, that capacity is only observed under pressure. A challenge makes the team's resilience, or lack of it, visible.

What then might a truly resilient team look like? How does that differ from what we would see in a more "brittle" team? A resilient team resolves challenges effectively and in a manner that maintains its health and resources. It tends to recover from challenges well, returning rapidly to a normal level of operations, and sometimes even improving its ongoing viability by gaining wisdom from experience. A brittle team, on the other hand, may fail to meet the challenge successfully, but even if it does muddle through the challenge, it will likely deplete its capacity for meeting future challenges.

A team that handled a challenge well and learned from the experience has likely increased its resilience for the next challenge. In contrast, handling a challenge ineffectively can strain team member relations or drain resources, reducing the team's resilience. Resilience can be self-reinforcing, triggering a virtuous cycle, but a lack of resilience, if una-bated, can create a downward spiral.

Resilience is not an "all or nothing" state. Rather it is best thought of as a multi-dimensional continuum. After experiencing a challenge, a team can be assessed from brittle to highly resilient along five "markers" or indicators of team resilience as shown in Table 2 below. As you review the table, reflect on a recent challenge your team faced and ask: "Was my team more brittle, or more resilient? Are there one or more of these five markers on which we were more brittle? On which were we more resilient?"

Thus, in the face of pressure, teams that are highly resilient resolve challenges as effectively as possible, maintain their team health and resources, recover quickly, and show on-ongoing viability or the ability to handle future challenges as a team.

Alternatively, you can probably recall a situation where a team resolved a challenge effectively but did so in a way that adversely affected the team's health or drained their resources. So, being highly resilient is more than "hardiness"—more than simply weathering a challenge. It is about sustaining long-term team viability. In practical terms, though, how can a team be resilient? What can teams actually do to create and maintain resilience?

WHAT RESILIENT TEAMS DO?

Over the last 25 years we have researched and worked with all types of teams. We have observed that resilient teams demonstrate three behavioral strategies for dealing with pressures, stressors, and difficult circumstances: they (a) minimize, (b) manage, and (c) mend. Below is a description of each of these three team resilience strategies, along with a description of several specific behaviors associated with each.

Minimize

Minimizing actions are those taken before the arrival of a problem or at its earliest onset. Minimizing involves anticipating and planning for challenges, avoiding some and reducing the impact of unavoidable ones.

First, to minimize challenges resilient teams anticipate challenges and plan contingencies. They pinpoint prior challenges that affected their team and actively uncover pending ones (e.g., a forthcoming surge in workload). They identify and prepare for those challenges, in some cases conducting "what-if" discussions about likely or high risk challenges.

For example, conducting "iceberg" warning drills, and reviewing "what-if" disaster scenarios, likely could have saved hundreds of lives on the Titanic. Recently, we have seen the cruise industry focus greater attention on preparing teams to handle emergent challenges, for example, conducting realistic drills that address a range of emergency scenarios. For a sales team, a change in market conditions can be their "iceberg." Resilient sales teams try to anticipate these changes and discuss ways to handle them before they arise. Similarly, some of the most effective municipal and state

Table 2 Five Markers of Team Resilience.

Marker	Brittle teams...	Resilient teams...
Challenge resolution	May ignore or delay their responses to a challenge, address a challenge incompletely, and/or fail to follow up to ensure resolution	Address a problem as quickly and effectively as possible given the constraints of the situation
Health	Find that their "health" (e.g., coordination, cohesion, morale) is compromised by the challenge—they tend to have lingering problems and may develop internal rifts, lack of communication, and discontent	Handle the challenge in a way that sustains their team's health, positive team spirit, communications, and mood
Resources	Drain valuable resources (tangible and/or emotional) to dangerously low levels while trying to tackle the challenge	Maintain or even "bank" tangible and social/emotional resources for use going forward
Recovery	Will continue in a state of diminished effectiveness for a substantial period of time after facing a challenge	Are able to quickly "bounce back" to previous levels of effectiveness and health after a challenging experience—in some instances becoming even stronger as a result
On-going viability	Because of their limitations addressing challenges, reduced health, drained resources, and inability to recover quickly, brittle teams do not maintain their viability; any new challenges present significant risks	Because of their ability to handle challenges, innate health, preservation/renewal of needed resources and ability to recover, resilient teams maintain viability and are ready to meet new challenges

emergency operations teams periodically identify potential risks to the community, assess which are most likely to occur, and establish contingency response plans. This enables quick, definitive action when a sudden need arises.

Another action that resilient teams take is to assess and understand their current readiness. Members of resilient teams monitor their own personal readiness. They also build in reviews to periodically assess the team's readiness—for example, they check in to see if any team members are absent, operating at reduced capacity, or simply preoccupied. They monitor resource availability and vulnerabilities. Overall, they keep an eye on their capacity and assess how any limitations might affect their ability to complete their mission or deal with upcoming challenges. As noted earlier, airline flight attendant teams work in an environment with both chronic and acute stressors. Some resilient flight crews quickly huddle together before a long flight to assess fatigue levels and confirm how they will cover for one another and communicate during the flight.

Third, resilient teams vigilantly identify early warning signs of potential problems. They vocalize concerns and give one another a "heads-up" when they see a challenge looming. They are particularly good at attending to unfavorable information and are careful not to dismiss concerns prematurely. For example, members of a resilient customer service team discuss "difficult" customer interactions, allowing the team to learn from experience, make adjustments, and be better prepared for the next challenging customer. Over time, resilient teams learn to recognize emerging problems more quickly than brittle teams; thus they are better prepared and less surprised.

Finally, resilient teams prepare to handle difficult circumstances. For example, they document who can fill in or help out if a challenging situation arises. They might establish clear "standard operating procedures" (SOPs) so it is easier to maintain critical work processes while simultaneously dealing with an emergency or period of high workload. NASA uses "analog" environments (such underwater and Antarctic team

habitats) to understand how best to prepare future astronauts and documents SOPs for a wide range of challenges.

Manage

Difficult circumstances cannot always be avoided or minimized; at times they must be navigated and endured. Managing actions are taken during a challenge. Resilient teams manage stressful events, as they are occurring, in five general ways.

First, they assess challenges quickly, honestly, and accurately. They take the time to huddle and explore the situation, their response, and what is and is not working. For example, during real-time assessments, we have seen resilient surgical teams and restaurant teams consciously switch to and from "normal" and "emergency" modes as necessary. Recognition of unusual operating demands can also be helpful here. We observed the leader of an insurance claims team explicitly and frankly "name" a high-demand period (e.g., "We are in the middle of a surge of cases due to the recent storm, so let's be sure to..."). The previously mentioned production plant lightning strike occurred at a key Phillips chip production plant. A management team at Nokia, one of Phillip's customers, quickly assessed the problem, judging it to be more severe than did Phillips. Nokia identified alternate chip suppliers, and even changed chip specifications in some cases. Their response enabled them to meet demand; this is an example of both good monitoring (Minimize) and a quick, realistic assessment of a challenge (Manage). Ericsson, another Phillips customer, did not manage this challenge as well, suffering in consequence.

Second, resilient teams address chronic stressors. Low level or background stressors are tempting to ignore, especially when other events require immediate attention. But left unattended, these low level stressors may manifest themselves in gradually reduced cohesion and effectiveness, or even break out in drastic and unexpected ways (e.g., a team member "losing it").

Third, members of resilient teams are more likely to provide backup and assistance to one another. Recall that during times of stress, individuals tend to focus on themselves. Unfortunately, that is also the time when others are most likely to need backup. In combat, that means recognizing when a team member is incapacitated and knowing how to fill in. But in a manufacturing team, a parallel behavior is recognizing the signs that someone is overwhelmed and offering support — a response encouraged at Frito Lay's manufacturing facilities, for example.

Next, resilient teams consciously maintain basic processes under stress. When teams and individuals are placed in extreme circumstances, their cognitive capacity and attention narrow. If teams have to expend too much of their resources handling basic tasks, they cannot dedicate their energy to navigating the problem at hand. But basic procedures need to be maintained even while the team is dealing with an unexpected problem. Resilient teams continue to perform required procedures and do so as efficiently as possible, so they have the capacity to deal with the "emergency." For example, at L'Atelier, a fine dining restaurant in Las Vegas, we watched the kitchen crew working smoothly and almost silently until a group of high-rollers arrived with an unusual set of "off-the-menu" food demands. The crew quickly shifted into problem-solving mode, bringing in management help, while simultaneously ensuring that all other kitchen procedures continued normally. In other instances, we have seen resilient teams assign a team member to ensure a key procedure is not being neglected, or use a checklist as a reminder about the basics.

Finally, resilient team members seek guidance. Soliciting high-quality information and advice is critical, and often necessitates looking to other team members, or even outside the team. Resilient teams maintain active networks, so channels of communication remain easily activated when an acute challenge emerges and guidance or support is needed. Although seeking guidance may come naturally for junior members of the team, the team lead and experienced team members may be hesitant to seek guidance because doing so is tantamount to acknowledging a shortcoming. A key attribute of resilient teams is deference to expertise, rather than rank, so anyone on the team should be able to ask for advice from any other team member. The most resilient teams are very proactive in seeking expertise; for example, an oil production team at BP established an agreement with an internal engineering expert that they could call him at any time day or night—and then did so at 2AM when a serious challenge arose. Interestingly, this particular behavior—reaching out to experts—may be difficult for teams under pressure. Some recent work at a Big Four accounting firm suggests that, under stress, teams are less likely to use input from people with deep, specialized expertise. Instead they defer to "rank," which yields lower levels of customer satisfaction.

Mend

Mending involves recovering from stress, learning from experience, and adapting as necessary. These are actions taken after a stressful event. Resilient teams have four major paths for mending after disruptive events.

First, resilient teams regain situation awareness as quickly as possible. In this context, situational awareness refers to reestablishing the "bubble" of what is going on, what is expected to happen next, and who is responsible for what. Members share an understanding of the "new normal" and if appropriate, they back down out of crisis or emergency mode. Members of resilient teams quickly communicate what they know and ask questions whenever they have doubts about the situation their team is facing. Part of regaining situation awareness is identifying where personal or team "recovery" is needed.

Second, resilient teams debrief. Debriefs (also known as "after action reviews") have been used successfully by the U.S. Armed Forces for over three decades because they are one of the most effective, efficient team interventions available. During a debrief a team reflects on what went wrong and right; uncovers lessons learned; and generates concrete action plans for the future. Resilient teams use debriefs because they encourage all team members to share their insights, surfacing critical information that might not be otherwise uncovered. Research has shown that teams that debrief outperform those that do not by an average of 20—25%. Recently, we observed a top leadership team at a financial services firm conduct a team debriefing. Some members expressed their belief that when a recent challenge emerged that the team responded hastily, while others felt that the team did not move fast enough. Debriefing provided them with the chance to vent and mend. They also reached an agreement about how they will prioritize and respond to similar challenges in the future.

Next, resilient teams ensure they address concerns or risk points that became evident during the encounter with the challenge. By making appropriate adjustments to processes and procedures, team resilience can be refreshed. Mending includes reestablishing relationships external to the team that may have been damaged and working through friction points that emerged within the team. By working to fix weaknesses revealed by a challenge, it is likely a team will respond in a more resilient way to the next one.

Finally, members of resilient teams express appreciation. This may sound like a "nice to have" but is actually critical for two reasons. Expressing appreciation helps strengthen member bonds and provide incentives for continued cooperation. Equally important, expressing appreciation helps to build useful team norms. For example, if a junior member of the team took a temporary leadership role and was thanked for it, the rest of the team will know that the junior member can be counted on to lead in the future if necessary, and that, more generally, "stepping up" to leadership is acceptable on the team. Moreover, resilient teams thank the people outside the team who have helped them, which increases the likelihood that their network will help them again when future needs arise.

In Table 3 below, we provide forty detailed behaviors falling under the Minimize, Manage, and Mend framework outlined above. These behaviors, developed initially in our work on team resilience for NASA and adapted for the business world, are the types of behaviors in which resilient teams engage and are phrased in a way that allows a team to consider which ones they demonstrated during a recent challenge.

We developed this set of 40 behaviors by first generating a list of potential behaviors based on a review of the literature and our observations of teams in a variety of settings. This longer list was then reviewed by subject matter experts,

Table 3 Forty Team Resilience Behaviors.

Minimize (Before)	Manage (During)	Mend (After)
Anticipate challenges and plan contingencies	*Assess challenges quickly and accurately*	*Regain situation awareness*
1. Pinpoint what has most stressed our team in the past and identify ways to avoid or minimize their occurrence in the future	17. Quickly and honestly assess, communicate about and respond to challenges when they arise	30. Clarify whether and how our situation (e.g., mission, resources, viability) has changed
2. Understand any near term pending challenges that are likely to "stress" our team (e.g., changes in work demands)	18. Huddle as a team to diagnose unexpected challenges/stressors and consciously generate alternative approaches/solutions	31. Do a quick post-event pulse check to identify where the team may need to "recover"
3. Identify the types of situations with which our team would have difficulty coping, and how best to prepare for these	19. Ensure all team members know when the team is moving from "normal" to "emergency" mode	32. Monitor individual team members for signs of post-event stress
4. Conduct "what-if" discussions (or drills) to clarify how to handle likely and/or critical challenges the team might face	20. Quickly identify "what is not working" in managing a challenging situation and make real-time adjustments	*Conduct team debrief*
5. Anticipate likely potential risks to cohesion or performance	*Address "chronic" stressors*	33. Conduct a team debrief to identify lessons learned and how we want to work together going forward
6. Identify ways our team could avoid being surprised (caught "off balance") by a sudden demand or crisis	21. Identify any "chronic" or long-standing stressors that cannot be avoided, and establish plans for managing them as best as possible	*Address concerns or risk points*
Understand current readiness	*Provide backup and assistance*	34. Confirm follow-up actions and responsibilities to address resource or health concerns and ensure on-going viability
7. Monitor our own personal readiness to meet upcoming challenges, anticipated or unanticipated	22. Recognize when a team member needs help (e.g., overloaded, addressing another need) and offer backup/support	35. Help individual team members who were adversely affected by the challenging event or stressor
8. Communicate with one another so we all know each other's current "capacity level"	23. Ensure all team members are comfortable speaking up when they need help	36. Work through friction points that may have emerged between team members as a result of the stressful experience
9. Maintain awareness of our team's overall readiness and vulnerabilities (e.g., resource availability, expertise levels)	24. Promptly ask for and seek assistance	37. Re-establish relationships with those outside the team that might have been strained by the challenge
Identify early warning signs	*Maintain processes under stress*	38. Make adjustments to processes, procedures, resources, etc. so we feel prepared to handle future challenges
10. Voice early alerts of potential problems including "heads-ups" and "could be's"	25. Provide timely ongoing status updates to team members as a challenging situation develops	*Express appreciation*
11. Ensure that warnings about potential problems are not dismissed prematurely	26. Reduce stressors and address threats by using standard operating procedures (SOPs) and known solutions when appropriate	39. Communicate appreciation for helpful actions taken by team members during a stressful event
12. Prepare team members to recognize the signs of a potential challenge or emerging problem	27. Continue constructive routines in the face of stress (e.g., regular meetings or communications)	40. Thank people outside the team for their help and support
Prepare to handle stressors	*Seek guidance*	
13. Identify and document back-up responsibilities (who will fill in or help out if X happens) that we can enact when needed	28. Defer to team members with the most relevant expertise and experience	
14. Document standard operating procedures (SOPs) so that these can be invoked as needed	29. Reach outside of the team when needed to obtain assistance from others who possess valuable knowledge and experience	
15. Address known vulnerabilities (e.g., insufficient sleep/rest, distrust among team members, lack of resources/expertise)		
16. Establish a process for assessing and communicating the nature and potential impact of a developing situation/challenge		

trimmed and modified, and organized into the behavioral categories shown in Table 3.

BUILDING TEAM RESILIENCE

Resilient teams have the capacity to withstand, overcome, and bounce back from challenges, and do so in a manner that enables sustained performance and on-going viability. How can a leader help his or her team become more resilient? Below we describe four sets of actions that can enable a team to demonstrate resilient behaviors more consistently and score higher on the five markers of resilience.

Develop Tools and Assemble Documents

Leaders can ensure that their team has access to the right tools to enable them to deal with future challenges. For common challenges, or those that can be anticipated, it can be helpful to assemble checklists and guides that provide advice for dealing with the challenge. In some cases these can be fairly prescriptive, listing actions to be taken and role expectations. For example, NASA provides crews with step-by-step procedures for dealing with certain emergencies. In other cases the tool may be more of a guide, containing troubleshooting tips, escalation guidelines, or key questions to consider. An example of this would be a guide with recommended role assignments for handling unexpectedly high workload periods in a manufacturing or retail environment.

Documenting standard operating procedures (SOPs) can also be helpful. When acute challenges emerge, resilient teams are able to maintain required work processes while simultaneously dealing with the challenge. Failing to sustain basic processes can create major post-challenge problems such as drained resources and damaged relationships with customers. SOPS and basic work checklists are helpful because they codify and provide a reminder about basic processes, allowing the team to maintain the basics as efficiently as possible, freeing capacity to deal with the emergency without "dropping the ball."

Resource matrices are another valuable tool. A resource matrix captures the names and contact information of people who can support the team when challenges arise. They can specify the type of expertise each person or group can provide, when they are typically available, and how to contact them. Recall that a key resilience behavior is seeking guidance; a resource matrix facilitates that behavior. If you set up a resource matrix, be sure to keep it current by periodically communicating with the people listed (and not just during an emergency).

Checklists, guidebooks, SOPs, and resource matrices are particularly helpful tools for teams with changing membership. New team members may be very capable but they typically lack local team knowledge which can create problems when the team is strained or stressed.

Conduct Team Resilience Training/Facilitated Sessions

Resilience can be developed through facilitated team working sessions and structured training. A good starting place for developing team resilience is to conduct a team resilience discussion. During this type of meeting you can:

- Identify recent challenges the team experienced;
- Anticipate forthcoming challenges and specify the "early warning signs" to be alert for;
- Review the common resilience behaviors and markers;
- Choose a few resilience behaviors that the team agrees to employ more frequently going forward.

Research has shown that team training boosts team effectiveness. Training can be conducted to prepare teams to minimize and manage challenging events. For physical tasks, practice handling simulated challenges. This approach is common in military and medical environments and in the cruise and aerospace industries, where both "high-fidelity" (very realistic) and "low-fidelity" simulations are used. However this approach, and in particular, low-fidelity simulations, can be used in other settings. After completing a simulation, discuss what went well and what would be done differently next time. This is also an opportunity to provide the team with constructive feedback, for example, about resilience behaviors that were observed (or not observed) and to clarify any perceived vulnerabilities.

For cognitive tasks, or ones where safety concerns preclude the use of physical drills, conduct cognitive walkthroughs. For example, with off-shore oil exploration teams, we have presented teams with a scenario and asked them to "think out loud" about the problem (e.g., what they would do, what data would review, who they would contact). As we shared more about the situation and the challenge became more complex, the team continued to vocalize what they would do at that moment. As with physical training, the learning occurs when reviewing their proposed response, for example, discussing how their actions would address the challenge and how it could affect their relationships and resources going forward. One benefit of both physical and cognitive training with intact teams is that it helps build a "shared mental model" — the common understanding among team members that enhances team coordination.

Conduct Post-Challenge Debriefs

Remember, while resilience is a capacity, it only becomes observable when challenges arise. So perhaps the most efficient and powerful way to build resilience is to conduct post-challenge debriefs. The research is quite clear: well-conducted debriefs work.

A debrief involves reflection, discussion and action planning. After a challenging situation or even after a period of "draining" low-level chronic challenges, assemble the team. Describe the Minimize, Manage, and Mend strategies and share the list of 40 team resilience behaviors with them. Then have them discuss questions such as:

- How well did we handle the challenge and its aftermath? How did we perform against each of the five resilience markers?
- Which of the resilience behaviors did we exhibit? Which could we have taken (or done sooner or differently) to help us handle this challenge better?

- Were we equally adept at minimizing, managing, and mending?
- What behaviors might our team do better or more frequently? Which actions would most help our team be more resilient in the future?

Be sure to recognize positive contributions and conclude by reaching agreement about how the team will work together, build resilience, and handle challenges going forward.

Create the Right "Team Resilience" Culture

The team leader can set the tone for his or her team, making it easier or more difficult for the team to operate in a resilient manner. For example chastising a team member for sharing an early warning sign can inhibit the entire team from speaking up and is a resilience "killer." Leaders can create a constructive team culture by modeling and reinforcing key behaviors such as:

○ Speak up, ask questions, and openly share bad news and early signs of potential problems;
○ Maintain composure during "emergencies;"
○ Defer to expertise, not just rank or seniority;
○ Keep an eye on one another and offer support before (to minimize), during (to manage), and after (to mend) a challenge;
○ Vocalize the need to switch to/from normal and emergency modes;
○ Thank people for helping out and discussing challenges.

SUMMARY

As the role of teams in the workplace continues to increase, organizations must find ways to improve their effectiveness. Given that teams are increasingly tasked with performing challenging tasks, often with high workloads or limited resources, team resilience should be assessed and developed. We have argued that team resilience is the capacity of a team to withstand and overcome challenges in such a way that both team performance and cohesion is sustained, and perhaps strengthened. We discussed why team resilience is important for most teams, not only for teams with high-risk or obviously strenuous assignments. All teams can increase their resilience through development of the behaviors that facilitate minimizing, managing, and mending.

SELECTED BIBLIOGRAPHY FOR RESILIENCE

An excellent overview of resilience at the individual level has been assembled by Gill Windle in "What Is Resilience? A Review and Concept Analysis," *Reviews in Clinical Gerontology,* 2011, 21, 152—169. From a non-pathological, "normal" perspective, George Bonanno has provided a useful primer in "Loss, Trauma, and Human Resilience: Have We Underestimated the Human Capacity to Thrive After Extremely Aversive Events?" *American Psychologist*, 2004, 59, 20—28.

Resilience at the team level is covered by Dominic J. Furniss and colleagues in "A Resilience Markers Framework for Small Teams," *Reliability Engineering and System Safety*, 2011, 96, 2—10. The importance of team resilience in extreme situations has been noted by Douglas Patton, John Violanti and Leigh Smith, eds., *Promoting Capabilities to Manage Posttraumatic Stress: Perspectives on Resilience*, (Springfield, IL: Charles C. Thomas Publishing, 2003). In "Building Resilient Teams" (Patrick Sweeney, Michael Matthers and Paul B. Lester, eds., *Leadership in Dangerous Situations: A Handbook for the Armed Forces, Emergency Services, and First Responders* (Annapolis, MD: Naval Institute Press, 2011), 182—201), Stephen J. Zaccaro and colleagues note that building cohesion, trust, and collective efficacy fosters resilience in cognitions, social factors, emotions, and behaviors that lead to effectiveness under pressure.

Organizational-level resilience research has stemmed mostly from the high-reliability organization literature, a good discussion of which can be found in Karl Weick and Kathleen Sutcliffe's *Managing the Unexpected: Assuring High Performance in an Age of Complexity* (San Francisco: Jossey-Bass, 1990). Recently, this has been extended and augmented by the work of Jeffcott and colleagues, cited above.

The future for resilience research is bright. Neerincx and colleagues in 2008 in "The Mission Execution Crew Assistant: Improving Human-Machine Team Resilience for Long Duration Missions" (Proceedings of the 59th International Astronautical Congress, 2008, 1—12) described the criticality of team resilience in upcoming missions to Mars. Our current work with NASA uses empirically proven team debriefs (Tannenbaum and Cerasoli, "Do Team and Individual Debriefs Enhance Performance? A Meta-Analysis," *Human Factors*, 2013, 55, 231—245) to build and sustain team resilience.

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