

# Team Development Interventions: Evidence-Based Approaches for Improving Teamwork

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The rate of teamwork and collaboration within the workforce has burgeoned over the years, and the use of teams is projected to continue increasing. With the rise of teamwork comes the need for interventions designed to enhance teamwork effectiveness. Successful teams produce desired outcomes; however, it is critical that team members demonstrate effective processes to achieve these outcomes. Team development interventions (TDIs) increase effective team competencies and processes, thereby leading to improvements in proximal and distal outcomes. The effectiveness of TDIs is evident across domains (e.g., education, health care, military, aviation), and they are applicable in a wide range of settings. To stimulate the adoption and effective use of TDIs, the current article provides a review of four types of evidence-based TDIs including team training, leadership training, team building, and team debriefing. In doing so, we aim to provide psychologists with an understanding of the scientific principles underlying TDIs and their impact on team dynamics. Moreover, we provide evidence-based recommendations regarding how to increase the effectiveness of TDIs as well as a discussion on future research needed within this domain.

*Keywords:* teams, team training, team debriefing, leadership training, team building

According to a recent survey conducted by Deloitte across 130 countries and over 7,000 participants, the number one global workforce trend is teamwork (Kaplan, Dollar, Melian, Van Durme, & Wong, 2016). Employees are expected to work more collaboratively than ever before, and according to Cross, Rebele, and Grant (2016), “collabora-

tion is taking over the workplace” (p. 4), with employees and managers reporting at least a 50% increase in the amount of time spent on team-related tasks. Specifically, organizations are implementing networks of teams, whereby projects are assigned to groups of individuals who work interdependently, employ high levels of empowerment, communicate freely, and either disband following project completion or continue collaborating. The rise of teamwork spans industries, including health care, science, engineering, and technology (e.g., Wuchty, Jones, & Uzzi, 2007). Teamwork is even critical for successful space exploration as is evidenced by the recent push for teamwork research to support a future Mars mission (Salas, Tannenbaum, Kozlowski, Miller, Mathieu, & Vessey, 2015).

Effective *teamwork* allows teams to produce outcomes greater than the sum of individual members’ contributions (Stagl, Shawn Burke, & Pierce, 2006) and is driven by *team processes* (i.e., “interdependent acts that convert inputs to outcomes through cognitive, verbal, and behavioral activities directed toward organizing taskwork to achieve collective goals”; Marks, Mathieu, & Zaccaro, 2001, p. 357) and *emergent states* (i.e., dynamic properties of the team that vary depending upon various factors), both of which require

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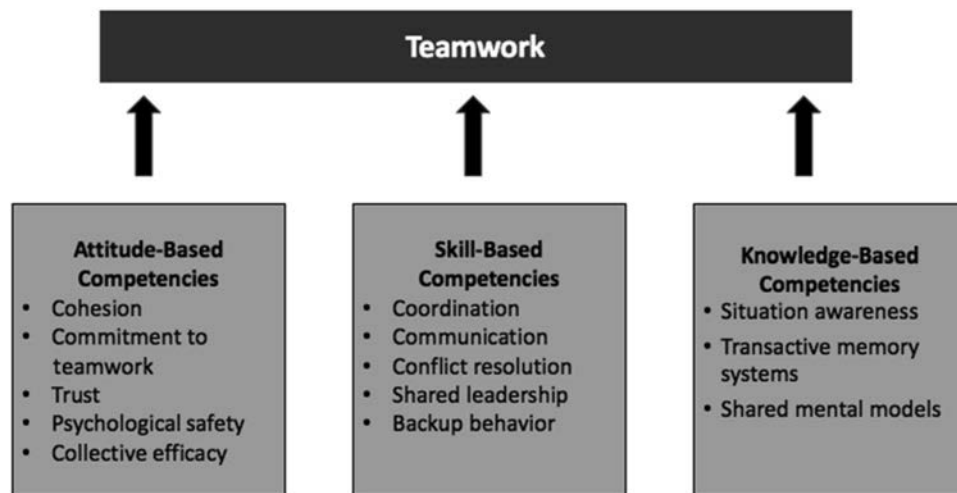
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*task* and *team* competencies. While taskwork competencies are the knowledge, skills, and attitudes (KSAs) necessary to achieve individual task performance, team competencies are those KSAs critical for team members to interdependently interact with one another effectively and in such a way that leads to positive team-based outcomes (Salas, Rosen, Burke, & Goodwin, 2009). Thus, in addition to exhibiting individual-level expertise (i.e., taskwork competencies), team members must also display expertise in teamwork (i.e., team competencies). A vast domain of team competencies exists, with organizational scientists from both industry and academia identifying those that are most critical to team

effectiveness. For example, for teams at Google, those most critical include psychological safety and dependability (among others; Rozovsky, 2015), while Salas and colleagues (2009) provide a general list of competencies relevant to teams across domains (see Figure 1 for a subset of these competencies), which can be classified into three broad categories (i.e., attitudes, behaviors, and cognitions).

Despite the increased expectations to work collaboratively and the benefits associated with effective teamwork, companies continue to report a lack of team competencies among their employees. According to a recent study conducted by PayScale, 36% of recent graduates have deficient team and interpersonal competencies (Dishman, 2016). Relatedly, companies also demonstrate the inability to manage and arrange teams because only 21% of executives believe their company holds expertise in designing cross-functional teams (Kaplan et al., 2016). As such, there is a compelling need to deploy psychologically sound, empirically tested ways to boost effective teamwork, and, more specifically, team competencies (e.g., adaptability, team orientation; Salas, Sims, & Burke, 2005), team processes (e.g., mission analysis, team monitoring, and backup behavior; Marks et al., 2001), interpersonal processes (e.g., conflict resolution, trust development; Shuffler, DiazGranados, & Salas, 2011), and leadership capabilities (e.g., intrapersonal skills, business skills; Hogan & Warrenfeltz, 2003).

One way to improve teamwork is through the implementation of *team development interventions* (TDIs; Shuffler et al., 2011). We define a TDI as a systematic activity aimed at improving requisite team competencies, processes, and overall effectiveness. There are multiple types of TDIs that are used in organizations across industries. Although TDIs may differ in terms of content focus, the intent of each is similar, to improve team effectiveness in order to enhance



*Figure 1.* Team competencies: Attitudes, behaviors, and cognitions. This figure provides a subset of evidence-based team competencies.



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results—and meta-analytic and empirical evidence suggest they do so successfully across proximal (e.g., team performance; Salas, Nichols, & Driskell, 2007) and distal (e.g., reduction in patient deaths; Hughes et al., 2016) outcomes.

In the current article, we identify four major types of TDIs and synthesize scientific evidence supporting the use of each intervention type. In doing so, we aim to provide psychologists with an understanding of the scientific principles and evidence underlying TDIs. The four types of TDIs presented are (1) team training, (2) leadership training, (3) team building, and (4) team debriefing. We selected these TDIs because each has ample theoretical and empirical evidence in support of its efficacy and because each intervention serves a distinct purpose. Although previous reviews have focused on one (e.g., team building; Klein et al., 2009) or two (e.g., team building and team training; Shuffler et al., 2011) types of TDIs, we include the aforementioned four to provide readers with an understanding of the range of interventions and *how* and *why* they work.<sup>1</sup> All four can be effective, but they serve different purposes and are designed differently (as identified in Figure 2). We note there to be two main categories of TDIs, training interventions and process interventions. These TDIs can be further distinguished by identifying who is attending the training program, either a leader (i.e., individual), or team members belonging to a team that is either intact (i.e., a team with fairly stable membership and shared work experience with each other) or ad hoc (i.e., a team with individuals lacking a history of working together). Generally, process interventions are designed for intact teams, while training interventions can be for leaders, ad hoc, or intact teams. As such, it is not our intention to promote the use of one TDI over the other; rather, our goal is to identify the conditions under which each strategy is most

effective and to highlight the main goal of each.<sup>2</sup> In the following sections, we define each TDI, highlight evidence in support of their success, and synthesize scientific findings regarding boundary conditions and influences on their effectiveness. We also describe four scenarios to provide the reader with a sense of the way in which each TDI tends to work in practice. These scenarios are based, in part, on the authors' experiences.

### **Improving Team Competencies: Team Training**

Team training is a formalized, structured learning experience with preset objectives and curriculum that target specific team competencies. Furthermore, this intervention improves team processes by improving these competencies and is argued to foster enhanced teamwork by promoting improvement in specific teamwork skills linked to team performance (Salas et al., 2008). Team training has been implemented across industries (e.g., engineering, education, health care; Salas et al., 2008) as science suggests its effectiveness across various outcomes (e.g., team communication, patient deaths; Hughes et al., 2016). Because of the strong empirical support for team training, we are seeing a rise in the implementation of these programs across health care settings nationwide to reduce the amount of medical errors caused by teamwork failures (e.g., Weaver, Dy, & Rosen, 2014). For example, the Agency for Healthcare Research and Quality (AHRQ, which is housed in the U.S. Department of Health and Human Services) invested in the development and dissemination of Team Strategies and Tools to Enhance Performance and Patient Safety (Team-STEPPS; AHRQ, 2017), which is a team training program consisting of case studies and web-based tools. This program has been used across health care institutions and is customizable (as evidenced by Lisbon et al. [2016], who implemented a version that entailed video vignettes, group discussion, and informational modules). In addition to health care, team training has also been circulated within the education domain; for example, CATME (the Comprehensive Assessment of Team Member Effectiveness) was developed to assist student engineering teams with their team effectiveness and consists of web-based tools, teamwork evaluation metrics, and other related instruments (see [info.catme.org](http://info.catme.org) for more information). These examples represent a few of many approaches to team training. Many team training programs have been created, there are many different tools available to facilitate them, and there is ample evidence supporting their effectiveness across

<sup>1</sup> Although the current framework is nested within the teams literature, it is important to note that it is not necessarily comprehensive and other modes of organizing the team development intervention literature may exist.

<sup>2</sup> Although these four TDIs can be used for multiple purposes (e.g., team training can include interpersonal content), the current paper focuses on the primary purpose of each TDI type for sake of parsimony.



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affective, cognitive, and performance-based outcomes at all levels (i.e., individual, team, organization; [Delise, Allen Gorman, Brooks, Rentsch, & Steele-Johnson, 2010](#); [Hughes et al., 2016](#); [Salas et al., 2007; 2008](#)).

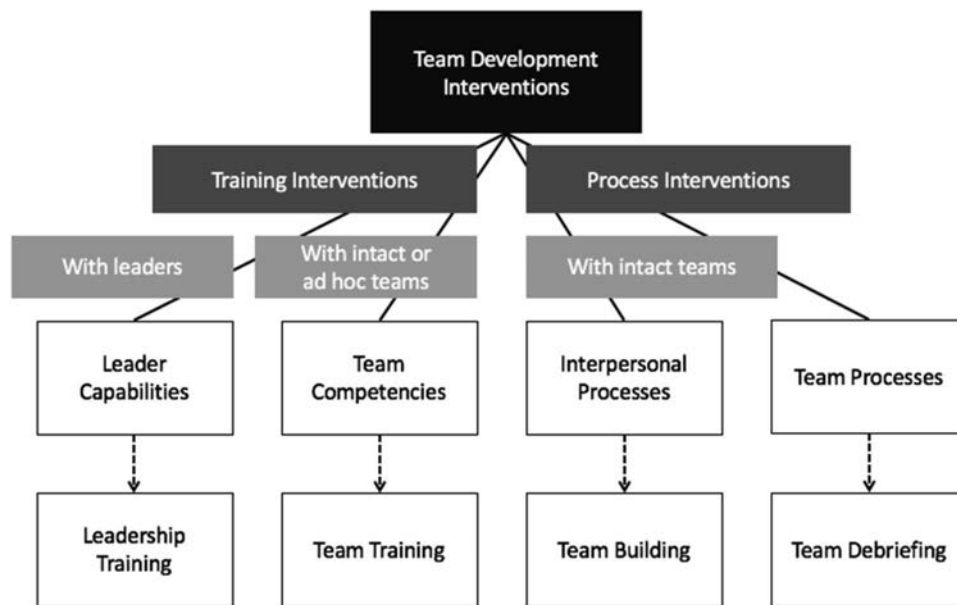
### Scenario 1: Team Training for Surgical Teams

A hospital has an active, high-volume surgical center. Surgeries are performed by teams (e.g., surgeon, anesthesiologist,

nurse, tech) that must coordinate to provide safe, effective care. They discover that teamwork breakdowns are a primary cause of surgical errors. Because team membership changes from surgery to surgery, it is very difficult to intervene at the intact team level, so they decide to conduct team training that focuses on transportable competencies that individuals can deploy during any surgery. They conduct a training needs analysis and discover that the most critical competencies are related to communication and mutual monitoring skills, including being alert for potential mistakes, speaking up regardless of seniority, communicating using standard language, and ensuring messages are accurately received (“closed-loop” communication). Using good instructional design principles, they develop learning objectives and a training curriculum that includes exercises (role-plays and simulated surgery) that allow the participants to practice and receive feedback on their communication and mutual monitoring skills. Follow-up shows that participants have acquired competencies they can apply during any surgery.

### Improving Leader Capabilities: Leadership Training

Heredity explains roughly 30% of the variance in leadership, while diverse experiences, training, and other factors are responsible for the remaining 70% ([Arvey, Rotundo, Johnson, Zhang, & McGue, 2006](#)). This suggests that individual leadership capabilities can be improved, particularly with well-designed leadership training programs, and meta-analytic evidence supports this claim ([Lacerenza, Reyes, Marlow, Joseph, & Salas, 2017](#)). Because leaders are an essential element to teams ([Salas, Priest, & DeRouin, 2005](#)), leadership training is an important TDI to discuss. Leader-



*Figure 2.* Team development interventions. This figure illustrates the four methods of team development interventions.



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ship training refers to interventions systematically designed to enhance leader knowledge, skills, abilities, and other components. The intent of these programs is to ensure participants are able to act effectively in formally appointed leadership roles and engage in successful leadership behaviors, which support effective team processing (Day, 2001).

While leadership training has been criticized by some (Morgan, 2015; Myatt, 2012; Nelson, 2016), recent meta-analytic evidence suggests that it improves learning, transfer, and organizational outcomes by up to 29% (Lacerenza et al., 2017). Thus, not only do these programs affect leaders participating in the programs (i.e., by increasing learning and their ability to utilize concepts on the job, which is known as transfer), but they also influence desired subordinate outcomes as well (e.g., subordinate job satisfaction, turnover; Lacerenza et al., 2017). Furthermore, they increase leadership capabilities which enhance team performance (e.g., transformational and empowering leadership; Stewart, 2006), thereby also leading to increases in team performance and other desired team level outcomes. For example, in the context of occupational safety, we see that leadership training (and more specifically safety leadership and transformational leadership training) enhances safety climate, safety compliance, and safety behaviors (e.g., von Thiele Schwarz, Hasson, & Tafvelin, 2016).

### **Scenario 2: Leadership Training for High-Tech Leaders**

A high-tech company is growing rapidly. They deploy teams extensively, from software development to customer

service. They need more team leaders who are prepared to promote team effectiveness, but it is hard to keep up with growth demands. As is true with many organizations, they have been promoting technically strong individuals into team leader positions. These leaders understand taskwork requirements, but are often ill-equipped to address teamwork demands. The company decides to develop a team leader training program. As with any good training program, they assess the learning needs of their team leaders, and establish learning objectives and a training curriculum. The program focuses on a variety of team leadership competencies, including for example, how to provide constructive feedback and how to handle team member conflict. Leaders are asked to complete two online modules to acquire foundational knowledge. They then attend live training in cohorts of 16, where they engage in role-play exercises to practice new skills and receive feedback, have the opportunity to reflect on their leadership practices, and develop personal action plans for applying their new skills when they return to their team.

### **Team and Leadership Training: What Works, According to Science**

The science of training is a line of research that is quite established and has led to the development of several conclusions regarding how to maximize training effectiveness (Salas, Tannenbaum, Kraiger, & Smith-Jentsch, 2012). Although team and leadership training represent distinct types of training, there are several underlying concepts which translate to both domains (and mostly all training types; Arthur, Bennett, Edens, & Bell, 2003). As such, we first discuss those generalizable training features, and then outline characteristics that may be unique to team and leadership training, respectively. First and foremost, it is important to note that merely providing training does not guarantee desired outcomes will be achieved. Furthermore, it is also important to clarify that regardless of the size of the investment in the training program, following evidence-based recommendations is the key to ensure outcomes (Brown & Sitzmann, 2011). As Wakefield and colleagues stated, “. . . simply spending money on leadership programs is unlikely to be enough. . . . [they] must be targeted at what works” (Wakefield, Abbatiello, Agarwal, Pastakia, & van Berkel, 2016). When delivering training programs, it is critical that salient theory and evidence are referenced to provide the most effective training. Theoretical frameworks of transfer (i.e., the extent to which trained behaviors are implemented on-the-job after training has ended), usually the primary goal of training, have been introduced and refined such that there now exists empirically supported frameworks to guide the design, delivery, and evaluation of training. One of the seminal frameworks of transfer was introduced by Baldwin and Ford (1988), who proposed that

the extent to which learning transfers into on-the-job behaviors is influenced by: training design features (e.g., training content), trainee characteristics (e.g., motivation), and characteristics of the work environment (e.g., organizational support). There is meta-analytic evidence to support Baldwin and Ford's (1988) model of transfer (Blume, Ford, Baldwin, & Huang, 2010) and this model applies to the context of team (e.g., Hughes et al., 2016) and leadership training (Lacerenza et al., 2017).

An important step to be taken during the initial stages of training development is that of a needs analysis. A needs analysis reflects the "process of gathering data to determine what training needs exist so that training can be developed to help the organization accomplish its objectives" (Brown, 2002, p. 569). During this analysis, you identify elements such as the teams that require training, the KSAs necessary for effectively completing team tasks, organizational goals and other elements of the environment that will affect training success, and the KSAs required for effective teamwork (Brown, 2002). A needs analysis boosts training effectiveness via identifying gaps between the existing and required skills and tailoring the training to address those gaps (Brown, 2002). It also provides insight into whether the organization will support training transfer. As an example, House (2001) first conducted a thorough needs analysis, including interviews and focus groups with stakeholders (e.g., experienced managers) and a review of competitors' leadership training procedures, before developing the leadership training program. This process also provides an opportunity to ensure that the goals of training align with both the needed skills of the trainees and the stakeholders' expectations of training.

Delivery methods are another well-known element that influences outcomes, and they can be categorized into three overarching dimensions: information (e.g., lecture), demonstration (e.g., video), and practice (e.g., role play). Although benefits exist for all three categories, research suggests the most effective programs tend to include a mix of the three (Salas et al., 2012). For example, in House's (2001) leadership training program for employees of a high technology company, the program included lectures, discussion, role play, case studies, and other exercises; the program ultimately proved to be successful at improving key management skills following training. Similarly, House and Tosi (1963) implemented information- (i.e., discussions, lectures, reading materials) and practice-based (i.e., on-the-job training exercises) delivery methods in a leadership training program with engineering managers that ultimately led to transfer 18 months following training. By incorporating multiple delivery methods, various learning methods can be used (e.g., individuals are provided with opportunities to practice leadership skills in addition to being exposed to the underlying information as this enables them to actively participate, reflect, and grow; McCauley & Van Velsor,

2004), and both passive and active learning benefits can be achieved (Hughes et al., 2016; Zapp, 2001).

In addition to information, demonstration, and practice-based delivery methods, research also supports the use of feedback in both leadership and team training. When possible, trainees should receive diagnostic feedback as part of their learning experience, whether it be following a role play exercise, on-the-job training, or a related experience (e.g., Barling, Weber, & Kelloway, 1996). Feedback can improve an individual's awareness of strengths and weaknesses, and provide him/her with information on how to self-correct undesirable behavior (Kluger & DeNisi, 1996). Lab- and field-based research supports the effectiveness of feedback (Engelbrecht & Fisher, 1995; Ford, Smith, Weissbein, Gully, & Salas, 1998), and it is a commonly used design feature in leadership (e.g., Abrell, Rowold, Weibler, & Moenninghoff, 2011) and team training programs (Hughes et al., 2016). For example, Engelbrecht and Fischer (1995) provided managers with a feedback report including strengths, weaknesses, and a developmental action plan during their leadership training program; training participants were rated higher than a control on various leadership skills (e.g., problem resolution, managing information) a few months following the training program. When implementing feedback for developmental purposes, however, it is important to frame the information as diagnostic rather than evaluative (e.g., Kluger & DeNisi, 1996), to help reduce reactance and increase acceptance.

## Leadership Training

In addition to the aforementioned general guidelines, there are several design and delivery characteristics specific to leadership training. In particular, research suggests that leadership training developers should pay close attention to the desired outcome (e.g., organizational results, transfer, learning) because leadership training programs may be more effective for some than others. While leadership training typically shows positive results for affective learning and affective transfer, they tend to be even stronger for cognitive learning, cognitive transfer, skill-based learning, and skill-based transfer (Avolio, Reichard, Hannah, Walumbwa, & Chan, 2009; Lacerenza et al., 2017). As such, when designing a leadership training program, it might be more beneficial to include (and evaluate) cognitive and/or skill-based content. Relatedly, stakeholder expectations should be managed to reflect these potential differences (e.g., make them aware that effects might not be as large for affective outcomes compared with skill-based).

The desired outcome(s) should also be identified early on during training development because the training design should align with the coveted outcome. Specifically, content included in the program (e.g., the skills trained) should

consist of that which is proven to influence the desired outcome. For instance, if team level outcomes are desired (e.g., cohesion, team satisfaction), the training should incorporate skills which support these outcomes. For instance, research suggests that transformational leaders engender team cohesion, potency, and performance; as such, if an organization wishes to increase these outcomes, we suggest to implement a program incorporating transformational leadership skills, such as charisma, risk-taking, and mentoring (Judge & Piccolo, 2004). Furthermore, because research suggests a strong impact of certain leadership styles (i.e., transformational leadership, empowering leadership; Lim & Ployhart, 2004) on team-based outcomes, we recommend the adoption of programs incorporating related skills if team outcomes are desired. Research has also shown that team leadership training programs that build skills related to initiating structure (a well-known facet of leadership; Judge, Piccolo, & Ilies, 2004) produce team level effects following training.

### Team Training

As with leadership training, there are additional recommendations specific to team training. As the goal of team training is to foster improved teamwork, the training should be tailored such that it is at the team level. In other words, training goals should be set at the team level and outcomes should be evaluated at the team level (Salas et al., 2015). Similarly, researchers note that both team processes (e.g., team communication) and outcomes (e.g., performance) should be measured to evaluate team effectiveness post-training (Smith-Jentsch, Sierra, & Wiese, 2013). As an example of an outcome measure, Siassakos and colleagues (2009) evaluated the effectiveness of a health care team training program with a measure of patient outcomes (e.g., rate of admission to neonatal intensive care unit). As an example of a process measure, Sonesh et al. (2015) implemented a self-report measure of perceived teamwork following a team training intervention. Data on team outcomes indicate how well the team is performing while data on team processes provide insight into why a certain level of performance is being observed. For example, a measure of team process could reveal that team communication is a major challenge.

Another recommendation specific to team training is to foster psychological safety during training. Psychological safety is a mutual belief among team members that the team can take interpersonal risks and that a “sense of confidence that the team will not embarrass, reject, or punish someone for speaking up” (Edmondson, 1999, p. 354) exists. Psychological safety provides team members the comfort needed to openly discuss errors without fear of punishment (Edmondson, 1999). This is especially critical during team training, as learning from errors has been shown to facilitate

enhanced performance in lab-based settings (Bell & Kozlowski, 2008). If psychological safety is established, team members will be more likely to openly discuss errors and how to address them in the future (Edmondson, 1999). If psychological safety is not in place, such a discussion may not occur.

### Improving Team Dynamics: Team Building

Team building has been defined as an intervention designed to foster improvement within a team, providing individuals closely involved with the task with the strategies and information needed to solve their own problems (Tannenbaum, Beard, & Salas, 1992). Researchers suggest there are four primary components to team building which can be implemented alone or in some combination: (a) goal setting, (b) interpersonal-relationship management, (c) role clarification, and (d) problem solving (Beer, 1976; Dyer, 1977). Locke, Shaw, Saari, and Latham (1981) suggested that setting difficult yet specific goals can improve performance. As an example of a difficult yet specific goal, a team might set the goal of meeting twice a week. Support for setting difficult yet specific goals has received ample empirical support (e.g., Mento, Steel, & Karren, 1987). In a team building context, the goal-setting component often includes the establishment of goals at both the individual and team-level. The interpersonal-relationship management component to team building focuses on developing trust and resolving conflict, whereas the role clarification component entails uncovering role ambiguities and conflicts and then establishing clear roles within the team (Beer, 1976). Finally, Buller and Bell (1986) describe the problem solving component as helping team members identify and solve task-related problems as well as identifying effective decision-making processes.

A meta-analysis conducted by Klein and colleagues (2009), based on 60 effect sizes, supports the utility of team building for several outcomes. Their results indicate significant positive increases in several cognitive, affective (e.g., trust), and process (e.g., coordination) outcomes as a function of team building interventions. However, they did not find a significant direct effect of team-building on team performance although performance may be enhanced via improvements in the cognitive, affective, and process outcomes discussed. Their results further indicate that all four components generally associated with team building interventions significantly improved some outcomes but goal setting and role clarification were the most effective. Goal setting and role clarification components build shared understandings of the task and team (i.e., shared mental models) that, in turn, may foster changes in team processes.

## Team Building: What Works, According to Science

Each of the components of team building are founded on theories that have been experimentally supported. Organizations should clarify the needs of the teams to determine the most appropriate team building components. [Locke and Latham \(2002\)](#) suggest that goal setting improves performance through four specific mechanisms, by: (1) directing attention and effort toward identified goals, (2) energizing, (3) affecting persistence, and (4) affecting action through the discovery and/or use of knowledge pertinent to the task. Goals set at the team level are intended to be relevant to all team members and to focus on team outcomes ([Mills, 1984](#)). Interpersonal-relationship management is a component that fosters trust and provides team members with ways to manage team conflict effectively ([Argyris, 1962](#)). This typically involves a facilitator fostering open conversations among team members to address any issues, resolve any existing conflicts, and subsequently improve trust among team members through these discussions ([Salas et al., 2005](#)). Providing individuals the opportunity to self-discover concerns through these discussions or other means can lead to awareness of specific teamwork weaknesses.

Trust enables team members to overcome uncertainty and accept vulnerability toward teammates, enabling better team coordination and performance; this is a robust finding meta-analytically demonstrated across both field and lab samples ([De Jong, Dirks, & Gillespie, 2016](#)). Virtually all teams experience conflict at times, so conflict management is also important for effective team functioning. Top performing MBA teams were found to engage in effective conflict resolution techniques, including: (a) targeting content, rather than interpersonal interactions, (b) discussing the rationale for work assignments, and (c) assigning work based on expertise ([Behfar, Peterson, Mannix, & Trochim, 2008](#)). Team building can help a team develop constructive conflict management techniques and avoid behaviors such as blaming and withholding information ([Edelmann, 1993](#)). [Behfar et al. \(2008\)](#) note that such behaviors can result in a decreased willingness to contribute to the team in a proactive manner ([Jehn, 1997](#)). Role clarification serves a similarly important function in increasing team effectiveness. Research in field settings indicates that through establishing clearer delineation of roles and responsibilities, team members attain a better understanding of their own and the teammates' responsibilities ([Salas, Rozell, Mullen, & Driskell, 1999](#)). A similar finding with real-world teams indicates that role clarity can decrease confusion during task performance, facilitate backup behavior, and yield more effective outcomes ([Eys & Carron, 2001](#)).

Role clarity does not assume role rigidity. Rather, it implies a common understanding among team members about the way roles should be performed. There can be role

clarity in teams that require team flexibility. For example, if team members have a common understanding about how different people should fill different roles based on specific work demands, they have role clarity without role rigidity. Role clarity is important in almost any team, but may be particularly so in teams that need to be adaptive. During a team building intervention, team members may discuss and determine the situations and task characteristics that require individuals to assume other team members' roles. Research in field settings has shown that this type of role flexibility can lead to enhanced team performance ([Campion, Medsker, & Higgs, 1993](#)) although the necessity of role flexibility is contingent upon team type and associated demands. Finally, problem solving helps team members identify task-related problems, and implement solutions accordingly. [Dyer \(1977\)](#) suggests that this component enhances team effectiveness because it provides a structure for teams to work together, pooling individual resources, to address key team problems. [Shuffler et al. \(2011\)](#) further argues this can develop enhanced decision-making skills, which has also been linked to more effective team performance ([Kerr & Tindale, 2004](#)).

Taken as a whole, each of the components of team building serves an integral purpose in furthering team effectiveness, and when using any of these approaches, it is critical that teams delineate tangible action plans or agreements to ensure there is no confusion about what needs to be done. It is also important to follow up on these plans to maintain accountability ([Tannenbaum et al., 1992](#)). The aforementioned information reflects evidence-based components of team building programs. Oftentimes, organizations respond to teamwork issues by scheduling team activities that are seemingly lighthearted, fun, and increase time spent between team members (e.g., a ropes course, icebreaker). Although these exercises may work in the short-term, there is limited evidence suggesting that team building activities lacking scientifically based components are effective ([Shuffler, Burke, Kramer, & Salas, 2013](#)). As such, it is recommended to incorporate only scientifically derived team building interventions to ensure benefits are achieved.

### Scenario 3: Team Building in an Insurance Claims Team

Insurance claims teams need to coordinate and communicate effectively to respond to customer needs, making prompt, smart decisions that benefit both the customer and the company. In one organization, a number of disruptive changes were introduced, including a change in technology and an organizational restructuring that resulted in a change of leaders and responsibilities. As a result, one of the teams was struggling. After talking with several team members, the team leader recognizes that there is a great deal of



ambiguity about roles and sense of direction. She decides to conduct a facilitated team building session to address the concerns. As part of this process intervention, the facilitator leads the team through a series of semistructured discussions and exercises. For example, they reestablish their mission statement (why the team exists), conduct a role clarification exercise to clarify responsibilities and who needs to be consulted before and informed after decisions are made, and agree to a few “rules of engagement” in terms of how they want to interact with one another. As part of the role clarification exercise, they identify a few tasks that will require role flexibility, allowing them to quickly fill in for one another to address customer needs. They commit to a monthly follow-up for the next few months to assess progress and make adjustments.

### Improving Team Processes: Team Debriefing

Team debriefing represents “. . . one of the most promising methods for accelerating learning from experience” (Eddy, Tannenbaum, & Mathieu, 2013, p. 976), and targets team processes. During a team debrief, team members reflect on a performance episode or experience. They discuss what happened during the event, uncover problems and improvement areas, confirm successes, and develop a plan for future performance periods (Tannenbaum, Beard, & Cerasoli, 2013). Team debriefs are designed to improve teamwork processes by engaging team members in active learning throughout the learning cycle (Kolb, 1984), which helps team members become more open to novel or opposing ideas and exhibit heightened levels of insight.

An effective debrief can lead to a shared understanding among team members about roles and responsibilities and about the team’s priorities, strengths, and shortcomings. In other words, team debriefs help a team build shared mental models (i.e., collective knowledge structures encompassing task and team relevant knowledge) which have been shown to increase team effectiveness (DeChurch & Mesmer-Magnus, 2010). Researchers have developed several types of debriefs; however, the underlying purpose is consistent across specific debriefing techniques: to enhance team effectiveness by leveraging active learning. For example, after-action reviews (AARs) represent a team debriefing technique that originated in the U.S Army (Darling, Parry, & Moore, 2005). This technique represents a typical team debrief such that team members discuss teamwork related issues following a performance episode. Another specific type of team debriefing used in the military is guided team self-correction (Smith-Jentsch, Cannon-Bowers, Tannenbaum, & Salas, 2008). This technique incorporates a trained facilitator who focuses the team’s discussion, creates and sustains a positive learning environment, encourages equal participation, demonstrates proper feedback practices, and coaches team members.

Team debriefs have been implemented across a variety of team types, in both high-stakes environments where mistakes may potentially cause catastrophic error (e.g., health care, Gaba, Howard, Fish, Smith, & Sowb, 2001; aviation, Dismukes & Smith, 2000; first-responders, Scott, Allen, Bonilla, Baran, & Murphy, 2013) and additional settings (e.g., virtual teams, Roebuck, Brock, & Moodie, 2004). Meta-analytic evidence suggests that team debriefs increase team performance by an average of 20% to 25% (Tannenbaum & Cerasoli, 2013), and despite their relatively short nature (average debrief time across 46 samples in a meta-analytic investigation was approximately 18 min; Tannenbaum & Cerasoli, 2013), their capacity for improving team effectiveness is powerful. In fact, Couper, Salman, Soar, Finn, and Perkins (2013) conducted a meta-analytic investigation of team debriefing among intensive care medicine clinicians and found that it improved patient outcomes (e.g., the return of spontaneous circulation during a cardiac arrest) in addition to boosting learning, nontechnical, and technical performance. Furthermore, Chen, Bamberger, Song, and Vashdi (2017) found team debriefs led to improvements in employee burnout over time. As with other TDIs, while on average, team debriefs are quite effective, their efficacy is influenced by several factors.

### Team Debriefs: What Works, According to Science

As mentioned previously, research shows team debriefing works across a variety of team types, and it works across team types because certain elements can be tailored and the content discussed during a team debrief is specific to the team at hand. For instance, although team debriefs are typically conducted following a work shift or performance episode, they can be implemented during any point of an ongoing project (Gómez & Ballard, 2011). However, certain fundamental elements influence team debrief efficacy, which are discussed below.

Team climate plays an important role in determining the success of a debrief, because this TDI often involves surfacing constructive criticism of the team and individual team members (Arafeh, Hansen, & Nichols, 2010). As such, team members should be informed how to provide appropriate feedback, such as focusing on task-related information instead of person-oriented factors (Flanagan, 2008). In addition, it is important for the team to exhibit a psychologically safe team climate as discussed within the team training section. This type of team climate is important for team debriefs because it reduces the onset of interpersonal conflict, enabling team members to contribute constructively to team discussions. Similarly, while teams can conduct self-led debriefs if structured properly (Eddy et al., 2013), research supports

the use of a trained facilitator when feasible (Fanning & Gaba, 2007; Halamek, 2008). Whether facilitator or team-led, the person guiding the debrief should encourage participation among all team members, ask open-ended questions targeting both team and task relevant KSAs, and encourage discussion of inhibiting team behaviors (Arafeh et al., 2010; Fanning & Gaba, 2007; Halamek, 2008). In addition, effective debrief leaders explain the debriefing process but do not lecture or dominate the discussion (Dismukes & Smith, 2000). Satisfaction with the debrief is heightened when team members feel included in the discussion and believe they can disagree with the leader and each other (Scott et al., 2013).

Debriefs are more effective when they are structured and follow a logical process rather than a free-form discussion. Research suggests that team debriefs structured by performance related or teamwork related categories are more effective than those structured chronologically (Smith-Jentsch et al., 2008). In the context of SBT, rather than following a strict chronological recap of what happened, it can be helpful to guide the team to consider specific factors such as how they communicated, made decisions, or provided each other with

backup behavior (Eddy et al., 2013; Smith-Jentsch, Zeisig, Acton, & McPherson, 1998). Effective debriefs include a discussion of positive and negative behaviors as this fosters learning, furthers the development of accurate shared mental models, and provides targets for action plans to improve performance (Ellis & Davidi, 2005; Taylor, Russ-Eft, & Chan, 2005). Following the team debrief, conclusions and agreements should be documented and revisited to facilitate follow-up on commitments and promote accountability (Salas et al., 2008).

In sum, the aforementioned interventions represent four primary TDIs; because teamwork is multifaceted (consisting of processes and emergent states; Marks et al., 2001) there is not an all-encompassing TDI that targets each teamwork facet. Leadership training represents the method by which leader capabilities are improved, team training targets team competencies, team building enhances interpersonal competencies, and team debriefs enhance team processes (again, see Figure 2 for a model depicting these relationships). To achieve the most out of each intervention, evidence-based practices should be followed. We have reviewed these practices above, and key conclusions from the science in support of each method are briefly outlined in Table 1.

Table 1  
*Evidence-Based Recommendations for Designing, Delivering, and Implementing Team Development Interventions (TDIs)*

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General training	
•	Use multiple and effective training methods (information, demonstration, practice, feedback)
•	Conduct a needs analysis
•	Provide diagnostic feedback
•	Ensure stakeholders' expectations align with the goals of the training
Leadership training	
•	Target soft skills (i.e., interpersonal, intrapersonal, and leadership skills) to enhance subordinate teamwork
•	Provide training on leadership styles related to teamwork (e.g., transformational leadership, empowering leadership)
•	Target skills related to initiating structure (e.g., managing team workload)
•	Evaluate cognitive and/or skill-based content
Team training	
•	Set training goals at the team level
•	Evaluate team processes (e.g., communication) and outcomes (e.g., performance) to assess training
•	Foster psychological safety during training
Team building	
•	Clarify needs of the teams to identify which components (i.e., problem-solving, interpersonal relationship management, goal setting, or role clarification) are most needed for team improvement
•	Incorporate discussions and exercises that enable the team to self-discover concerns that can hurt their effectiveness
•	Guide the team to develop tangible action plans/agreements
•	Follow up on plans/agreements to maintain accountability
Team debriefing	
•	Ensure a psychologically safe team climate exists
•	If possible, use a trained facilitator, regardless provide ample structure to the debrief
•	Focus on performance- and teamwork-related categories, rather than reviewing events chronologically
•	Discuss positive and negative examples of behavior
•	Document conclusions and agreements reached

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*Note.* Selected citations: Abrell, Rowold, Weibler, & Moeninghoff, 2011; Arafeh, Hansen, & Nichols, 2010; Arthur, Bennett, Edens, & Bell, 2003; Avolio, Reichard, Hannah, Walumbwa, & Chan, 2009; Barling, Weber, & Kelloway, 1996; Brown, 2002; Dyer, 1977; Eddy, Tannenbaum, & Mathieu, 2013; Ellis & Davidi, 2005; Engelbrecht & Fischer, 1995; Fanning & Gaba, 2007; Flanagan, 2008; Ford, Smith, Weissbein, Gully, & Salas, 1998; Halamek, 2008; House, 2001; Judge, Piccolo, & Ilies, 2004; Kerr & Tindale, 2004; Kluger & DeNisi, 1996; Lacerenza et al., 2016; Lim & Ployhart, 2004; Locke & Latham, 2002; McCauley & Van Velsor, 2004; Mills, 1984; Piaget, 1952; Salas, Rozell, Mullen, & Driskell, 1999; Salas, Tannenbaum, Kraiger, & Smith-Jentsch, 2012; Shuffler, DiazGranados, & Salas, 2011; Smith-Jentsch, Zeisig, Acton, & McPherson, 1998; Smith-Jentsch, Cannon-Bowers, Tannenbaum, & Salas, 2008; Tannenbaum & Cerasoli, 2013; Taylor, Russ-Eft, & Chan, 2005; Zapp, 2001.

#### Scenario 4: Team Debriefing With a Senior Leadership Team

In a financial services organization, the senior leadership team (SLT) of one of their largest business units was facing a number of significant challenges. As with most senior leadership teams, their team members come from different parts of the business (e.g., finance, marketing, human resources, operations) and often interact with different customers (e.g., Region A vs. B). Each team member is also the leader of their own, more homogenous, team. When working on the SLT, they are expected to represent the overall enterprise, but they often default to representing their own areas during SLT meetings. They acknowledge that this is adversely affecting their ability to work as a team and to make effective decisions, so they decide to conduct a series of team debriefs and bring in a facilitator for assistance. During the first debrief they reflect on their most recent team meeting. They identify where they worked well together and where there were disconnects. For example, they uncover where one team member was simply intending to update the team about his area, but the other team members thought they were there to make a collective decision. They reach a few tangible agreements about how they intend to work together during future meetings. During subsequent debriefs they assess progress on prior agreements, and discuss other performance events; for example, how they worked together during a recent change initiative.

#### Areas for Future Research and Practice

The information presented described the large body of research surrounding TDIs; however, more remains to be discovered, particularly in regards to environmental influences. A variety of team types exist and they differ in regards to tasks, purpose, and level of interdependence (e.g., Sundstrom, McIntyre, Halfhill, & Richards, 2000). It is possible that certain team types may benefit more from any specific TDI, rather than each TDI being universal. Furthermore, because environmental factors (e.g., globalization, technological improvements) lead to alterations in the nature of work (e.g., knowledge-based work, collaboration), we argue that some team types will be used more frequently, and could benefit from targeted TDIs. Specifically, three such types of teams include virtual teams, software development teams, and teams with nonhierarchical leadership structures; all of which are discussed below.

Virtual teams are becoming increasingly common (SHRM [Society for Human Resource Management], 2012) because they offer many potential advantages. Some common characteristics of virtual teams identified within the literature include communication via virtual tools, geographical distribution, group membership in multiple organizations, and coordination across multiple time zones (Schweitzer & Duxbury, 2010). Although virtual teams may experience

different challenges because of the variety of possible team characteristics, (for example, telecommunicating programs allow some team members to work remotely, although they may be within the same time zone, while other individuals on the team continue to work in the office [Bloom, 2014]) some core challenges remain the same as a function of the widely used virtual communication tools. In particular, both the richness and the timeliness of team communication may be impacted by the tools used to communicate (Daft, Lengel, & Trevino, 1987), warranting the use of TDIs designed specifically for these concerns. For instance, misunderstandings may arise from a lack of nonverbal cues (e.g., facial expressions; Sproull & Kiesler, 1986). As a consequence of these communication limitations, researchers have suggested that teams communicating solely via virtual tools will experience limited social presence or a lack of social and psychological connection with other team members (Biocca, Harms, & Burgoon, 2003). Because of limited social presence and a lack of face-to-face contact, team members may struggle to form interpersonal relationships and develop trust (Jarvenpaa & Leidner, 1998). Other misunderstandings may arise because virtual teams often include team members from multiple organizations; each organization may have unique norms and approaches to works. Taken as a whole, these potential challenges highlight the need to develop future TDIs specifically suited to target these challenges (Schweitzer & Duxbury, 2010). Virtual teams may be better suited for a team training program that provides feedback in real-time (e.g., *as you go* team training) or from wearable technology (e.g., sociometric badges). For example, wearable sensors provide information regarding social interactions among team members, and a real-time TDI could be programmed to alert virtual team members if repeated interactions have yet to occur between certain team members, triggering interpersonal team development.

Software development teams represent another opportunity for additional TDIs. These teams are often virtual and consequently face many of the challenges outlined above. Moreover, software development teams often form for a new project, and disband upon completion, so they lack team history (Faraj & Sproull, 2000). Teams with short lifespans require team members to trust one another quickly in order to complete task requirements, and often have insufficient time to build strong interpersonal relationships. Action, such as a well-developed TDI, that helps these teams build trust swiftly is critical, as early trust has been found to predict team performance (Crisp & Jarvenpaa, 2013). Moreover, such teams are increasingly using agile programming approaches, which call for ongoing coordination, continual adjustments, and a high degree of team adaptation (Larman, 2004; Nerur, Mahapatra, & Mangalaraj, 2005). Another possibility for conflict or misunderstandings arises because software development teams are

typically self-organized and self-managed, with fluid roles (Nerur et al., 2005). Conflicts and confusion may arise because of this lack of clearly structured roles (Moe, Dingsøyr, & Dybå, 2009). As a consequence, there is a clear need to adapt TDIs so they target the specific team competencies required to supplement existing IT techniques. For example, IT teams are increasingly using a “scrum” technique, in which they organize their work into 2-week cycles called sprints. In this approach, after projects are identified, sprints are structured around the requirements. Each sprint has its own list of deliverables. Regular meetings are conducted to ensure team members are meeting targets and the team is expected to make adjustments, as needed, along the way. It is easy to see how TDIs, such as team debriefs, can be tailored to supplement the scrum technique. Relatedly, a team building TDI could enable team members to address interpersonal problems that may arise with trying to meet a series of short deadlines, and team training that involves a simulated scrum assignment could assist with the development of team adaptability, and related team competencies necessary for this context.

Last, the movement from hierarchical, top-down leadership to decentralized, team-led leadership is prevalent (Tannenbaum, Mathieu, Salas, & Cohen, 2012) as organizations continue to adopt the use of self-managed teams, across industries (e.g., military, health care, technology). In these teams, some leadership functions are distributed or shared among team members, or they organically emerge over time. As a result, these teams experience different dynamics that may require specially targeted TDIs. Because of the inherent differences between shared and hierarchical leadership (i.e., leadership is distributed throughout team members instead of a single individual; Ensley, Hmieleski, & Pearce, 2006), we argue that different leadership capabilities are needed for an individual to flourish within this structure. For instance, competencies required for effective *shared* leadership may include team competencies (e.g., developing and sustaining psychological safety; Edmondson, 1999), while effective traditional leadership warrants individual competencies (e.g., self-efficacy). As such, shared leadership training programs may include team competencies in addition to individual competencies; however, future research is needed to discern whether this holds true.

## Conclusion

Teams are found everywhere, saving lives in hospitals, operating planes, executing military orders, solving societal issues, and inventing the next piece of life-changing technology. The issues faced by organizations today are complex and dynamic, requiring responsive, quick, adaptive, and diverse groups of individuals (Tannenbaum et al., 2012). Although individual-based work continues to evolve into team-based work, the solution is not as simple as

replacing a team for an individual. The solution requires an *effective* team, equipped with the KSAs, both at the individual and team level, that is capable of high-quality team processes and can adjust to meet evolving performance demands. This does not happen by chance and we cannot assume assembling a group of highly skilled individuals will result in an expert team. In addition to being technically able to perform their assignments, team members must also demonstrate teamwork competencies and leader capabilities, and the team as a whole must engage in effective interpersonal and team processing. To achieve these aims, teams should participate in psychologically sound, evidence-based TDIs as ample evidence exists highlighting that when designed and implemented properly, they can boost a team’s capabilities and performance. Unfortunately, we have seen many organizations use other team interventions with the false hope that simply giving a team the chance to spend time together or perform some fun activity together will make them into a better team. We are not against teams having fun, but it is important to differentiate between research-tested, evidence-based TDIs like the ones described above and those that are simply a pleasant, fun diversion that might boost team affect for a few days. When the need for collaboration is real and consequences of poor teamwork are significant, the choice of an evidence-based TDI is a sound one.

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