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A Century of Work Teams in the *Journal of Applied Psychology*

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Work groups are a vital link between individuals and organizations. Systematic psychological research on the nature and effects of work groups dates back at least to the Hawthorne studies of the 1920s and 1930s. Yet little to none of this work appeared in the *Journal of Applied Psychology* until the 1950s when groups were treated primarily as foils against which to compare the performance of individuals. From the 1990s to the present, the volume of research and the nature of topics addressing work group/teams expanded significantly. The authors review the evolution of team research over the past century with a particular focus on that which has appeared in this journal. They chronicle the shift from a focus on individuals within teams, or on individual versus team comparisons, to a focus on the team itself and larger systems of teams. They describe the major outcomes studied within this literature, and how they relate to the nature of team tasks and structures. Further, the authors consider the roles of team members' characteristics and composition, and team dynamics in terms of processes and emergent states. They close with a call for future research that models dynamic team relationships in context and as they operate in complex systems.

Keywords: work group, teams, tasks, structure, process, composition, emergent state

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Psychology traces its origins to Wundt's laboratory at the University of Leipzig circa 1879 (Boring, 1929) where he and his colleagues studied general laws of behavior known as *structuralism*. Three Americans who studied with Wundt—Hugo Musterberg, James McKeen Cattell, and Walter Dill Scott—broke with that tradition and emphasized the importance of individual differences and what would become *differential psychology* and *functionalism* (Landy, 1997). The development of industrial/organizational and other applied forms of psychology in the United States were founded on the idea that individual differences matter, and relevance to the workplace is important (Katzell & Austin, 1992). From its inception, the *Journal of Applied Psychology* (*JAP*) embraced understanding individual work behavior and outcomes. Hall, Baird, and Geissler (1917), in the forward to the first issue of *JAP*, observed that "perhaps the most striking original endeavor to utilize the methods and results of psychological investigation have been in the realm of business" (p. 5) and suggested that [this psychology] "must appeal to every human being who is interested in increasing human efficiency and human happiness" (p. 6). But individuals work in collectives, and our focus is on team research that has appeared in *JAP* over the past century. We adopt Kozlowski and Ilgen's (2006) definition of a team[1] as:

> (a) Two or more individuals who; (b) socially interact (face-to-face or, increasingly, virtually); (c) possess one or more common goals; (d) are brought together to perform organizationally relevant tasks; (e) exhibit interdependencies with respect to workflow, goals, and outcomes; (f) have different roles and responsibilities; and (g) are together embedded in an encompassing organizational system, with boundaries and linkages to the broader system context and task environment. (p. 79)

In the first half of the 20th century little work on social and organizational factors was published in *JAP* (Katzell & Austin, 1992). Given the dominance of concern with individual differences at that time, this should not be surprising. After all, almost all personnel decisions and actions in this juncture of history revolved around individuals. People were primarily recruited and selected as individuals; trained and developed as individuals; and then eval-

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[1] Some authors distinguish between *teams* and *work groups* with the key distinction being that the former term implies that members occupy particular positions whereas work groups need not have designated positions. Although this distinction is sometimes important, for purposes of this article, we will use the two terms interchangeably.

uated and paid as individuals—at least in contexts not covered by some collective bargaining contract. The individual domain typically included one or more cognitive, personality, or emotional characteristics and the physical and social milieu represented the environment domain. At the risk of oversimplification, it is helpful to think of applied psychology of work at that time as that of the individual almost exclusively concerned with the impact of individual differences (person variables) and situational conditions on individuals' performance and attitudes.

To test the above assertion, we performed a keyword search of the *JAP* from its launch through December 2015, using the terms *work group* or *team* in the article title. It yielded 203 hits. A second search based solely on the term *group* in the article title yielded another 375 hits. We reviewed each of the identified articles and eliminated ones that were not about work groups or teams, which winnowed the number of applicable articles to 402 for this review.[2] A graph of article frequencies per 5-year periods appears in Figure 1. As implied above, *JAP* published no team articles in its first 32 years. From the 1950s through the 1980s, no decade ever topped 40 articles on the topic. The tide turned in the 1990s evidencing a marked upward curve over the past quarter century (curvilinear temporal trend: $R^2 = .81$!), and *JAP* has since become a primary outlet for work team research.

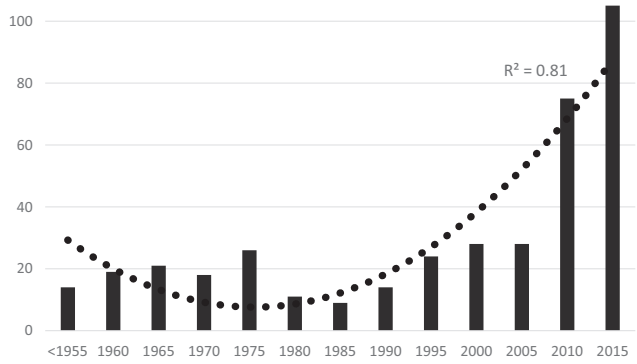

Figure 1. Five-year frequency trend of work group/teams articles in the *Journal of Applied Psychology* from 1917 to 2015.

The Dawn of Group Research

Figure 2 depicts several world events over the past century and juxtaposes on them important developments in teams research. We label 1917–1949 as the "Pre JAP Teams Era" and list important developments that occurred in other fields such as communications and social psychology. For the following years, designated "JAP Teams Era" in Figure 2, we list select *JAP* team articles based on their representativeness of the types of work being done at that time, and their frequency of citation in the literature.

Scholars often trace the origins of work group research to the Hawthorne studies conducted at the Western Electric Company during the 1920 and 1930s (see McGrath, 1997; Salas, Cooke, & Rosen, 2008). The Hawthorne studies spawned much theorizing and research about the influence of group phenomena, but publication of this work appeared outside of *JAP* (e.g., Homans, 1950; Roethlisberger & Dickson, 1939). The simple fact was that groups were the province of sociology, social psychology, communications, and management during that period (Levine & Moreland, 1990), and research on them was slow to make its way into *JAP*. McGrath's (1997) review of small group research included 236 cited works, only four (2%) from *JAP* (and one of those was not a group study). Sundstrom, McIntyre, Halfhill, and Richards's (2000) review cited 195 sources of which 18 (9%) came from *JAP*. And the *Annual Review of Psychology* from 1950 through 1976 published 19 reviews of group process or small groups, and only one of them had more than 4% studies from *JAP*.

Several factors were likely contributors to the low volume and limited impact of work group research in *JAP*. One was that other outlets appeared to be a better fit for group research. Annual Reviews chapters from 1950 to 1964 were entitled *Social Psychology and Group Processes*, and all were authored by social psychologists. Katz and Kahn's (1966) classic book, *The Social Psychology of Organizations*, sparked a great deal of interest in team-like structures and processes, yet much of the resulting research appeared in outlets other than *JAP*. At the same time, group research in social psychology was waning, leading Steiner (1974) to exclaim:

> By the 1960s the group did, indeed, seem to be rather dead, or at least, in very deep hibernation. Its deplorable health or recent demise was sometimes lamented in Annual Review chapters, or over the fourth martini. But the mourners were few in number, and even the immediate family did not seem deeply grieved. (p. 101)

That pattern of decline of group research changed in the late 1980s, leading Levine and Moreland (1990) to comment that "the torch has been passed to (or, more accurately, picked up by) colleagues in other disciplines, particularly organizational" (p. 620). Several notable events likely coalesced to facilitate this shift toward applied research and teams. These included increased global competitiveness from collective societies (e.g., Japan), greater complexity and volatility of organizational environments, and the demise of bureaucratically structured organizations with simplified jobs. Moreover, some highly visible and tragic military events in the Persian Gulf (i.e., incidents involving the USS Vincennes and USS Stark) sparked a renewed interest and funding for research on team decision making in the United States (Cannon-Bowers & Salas, 1998). By the 1990s the digital age was upon us, and organizations sought new ways to structure, manage, and deploy their human capital to remain competitive. Team-based work arrangements afforded that flexibility and were proliferating throughout Western organizations.

Early Heritages of Group Research in *JAP*

McGrath and his colleagues described three schools of thought in group research that evolved in parallel with little cross-pollination (McGrath, 1997; McGrath, Arrow, & Berdahl, 2000). One school traces its roots to Kurt Lewin and eventually to scholars at the University of Michigan (e.g., Back, Festinger, French, Kelly, Newcomb, Schachter). It focused on group influences on individuals' attitudes and behaviors and was largely responsible for the dawn of experimental laboratory investigations.

[2] See online supplement for details about our *JAP* study search strategy and results.

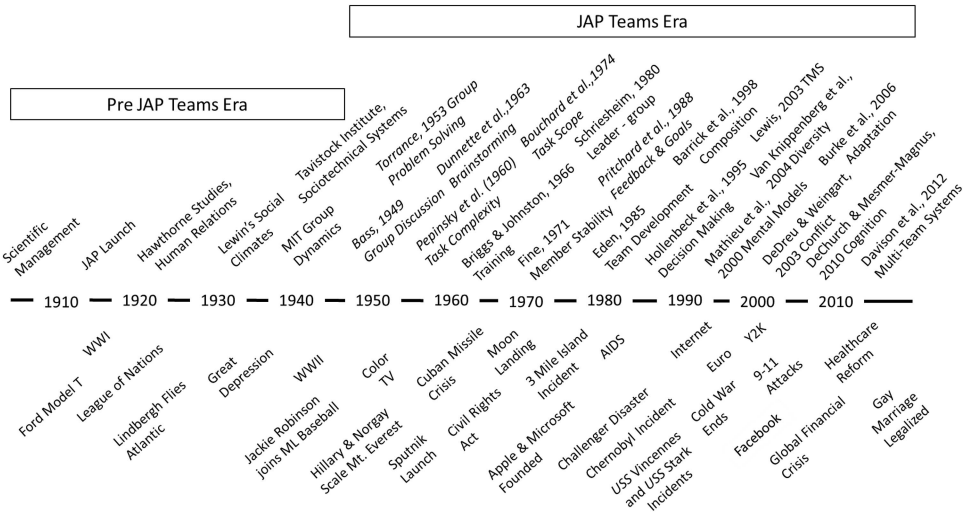

Figure 2. Historical milestones and the evolution of teams research in *Journal of Applied Psychology* (JAP) and beyond.

Steiner (1974) referred to this approach as the *individualist orientation*, which viewed group members as self-contained units acting in response to internal states or processes. In other words, groups were considered as social influences on individual-level processes.

McGrath's (1997) second heritage focused on small groups as intact social systems. It began with Bales (1950) and others' associated with Harvard University (e.g., Borgatta, Cohen, Hare, Parsons, Thelen) in the 1950s. They focused on patterns or sequences of actions within teams as a whole, most often captured by Bales's (1950) Interaction Process Analysis (IPA) system. McGrath (1997) argued that this system yielded eloquent generic representations of group processes but was limited by its intensive data processing requirements, the failure to incorporate contextual factors, and by being primarily limited to the laboratory. Steiner labeled this the *groupy orientation* in which individuals were presumed to be elements in a larger system, a group, organization, or society. In terms of modern meso-theorizing, the individualist orientation adopted a cross-level perspective whereby higher-level group variables influence lower-level motives and behaviors of individuals, whereas the groupy orientation focused on patterns of members' actions and processes as collectives at the group level of analysis (see Mathieu & Chen, 2011).

The third early school of thought was associated with McGrath himself along with his colleagues (e.g., Allport, Altman, Davis, Hackman, Shaw, and Steiner). It sought to identify universal group properties that would lead to performance, but it quickly came to focus on the critical role that the group task played on the underlying relationships (McGrath, 1997). We will refer to this as the *task contingency* approach. Notably, McGrath (1964) and Hackman and Morris (1975) advanced an organizational framework along these lines depicting team inputs, processes, and outcomes which came to be known as the IPO model. The IPO model guided research in the ensuing four decades but has increasingly been viewed as a limiting factor stifling more creative multilevel and dynamic theories and investigations (cf. Ilgen, Hollenbeck, Johnson, & Jundt, 2005; Mathieu, Maynard, Rapp, & Gilson, 2008).

The early work group research in *JAP* was primarily that of an individualist orientation. Bass (1949) examined perceptions of leaders and relative speaking times in leaderless groups. A variation of the individualist approach is to view group features as either implicit or explicit moderators of individual-level relations. Trumbo (1961) examined group-related variables as both direct effects and moderators of individual predictors of members' attitudes toward change. More recently, the behavior of teams qua teams—the groupy approach with team performance or team level social-emotional behaviors as criteria—has grown in emphasis in *JAP*. Tziner and Vardi (1982) examined the influence of leadership style and group cohesiveness on the performance of tank crews, whereas Mathieu, Gilson, and Ruddy (2006) explored the role of service team features on their empowerment and performance. Along the way, there has been a growing appreciation for the importance of the task contingency approach. For example, LePine (2005) examined how changes in means-ends relationships associated with a task led to variable levels of decayed performance depending upon the team's composition.

In sum, teams and groups appear in the journal as sources of direct influences on individuals' performance or social-emotional responses, as moderators of individual level relations (contingent influences), and as legitimate aggregate behavioral phenomena in the workplace. Gone are the days when a single school of thought or a small handful of scholars dominate the literature. Modern-day approaches are clearly a synthesis of these different heritages which is, no doubt, partly attributable to the growing use of multilevel theories and designs that serve to integrate theoretical perspectives and empirical investigations (Mathieu & Chen, 2011).

Team and Individual Outcomes

Ilgen (1999) noted that the study of teams embedded in organizations places an emphasis on developing indices of their effectiveness that are valid, reliable, and neither deficient nor contaminated. Whereas work prior to the 1990s often focused on individual outcomes or the quality of team processes as the criteria

for investigations, work over the past few decades has paid more attention to the importance and relevance of team outcomes in both field and laboratory investigations.

The effectiveness of teams can be gauged in many ways and we advocate a multilevel, multiple constituencies' framework (cf. Hackman & Morris, 1975). For example, most team research has featured two fairly general forms of criteria, namely tangible outputs and members' reactions. At the team-level of analysis, various antecedents have been associated with tangible outcomes such as productivity (e.g., Pepinsky, Pepinsky, Minor, & Robin, 1959); efficiency (e.g., Wiest, Porter, & Ghiselli, 1961); work quality (e.g., Maier & Hoffman, 1960); retention (e.g., Hausknecht, Trevor, & Howard, 2009); and creative outcomes (e.g., Cohen, Whitmyre, & Funk, 1960). Members' collective emergent states, such as viability (e.g., Druskat & Wolff, 1999), affective tone (e.g., Sy, Côté, & Saavedra, 2005), and cohesion (e.g., Greene & Schriesheim, 1980) have also been featured as outcomes.

At the individual level of analysis, members' performance (e.g., O'Reilly, 1977), contributions to the team (e.g., Price, Harrison, & Gavin, 2006), helping behaviors (e.g., Gonzalez-Mulé, DeGeest, McCormick, Seong, & Brown, 2014), and absence (e.g., Mathieu & Kohler, 1990) have been examples of tangible outcomes, whereas their work attitudes (e.g., Pritchard, Jones, Roth, Stuebing, & Ekeberg, 1988), turnover intentions (e.g., Chen, Sharma, Edinger, Shapiro, & Farh, 2011), and depression (e.g., Parker, 2003) are examples of reaction criteria. Notably, other constituencies of team functioning, such as customer satisfaction (e.g., Kirkman, Rosen, Tesluk, & Gibson, 2006), organizational safety (e.g., Smith-Jentsch, Mathieu, & Kraiger, 2005), and conservation (also known as *green practices*) have been featured far less often, but also represent important by-products of team activities.

It is safe to say that there is not a standard set of criteria measures for team research—nor should there be. Team effectiveness is context specific, and although at an abstract level we may be able to refer to the efficiencies of airline cockpit, surgical, knowledge management, pharmaceutical sales, forensic accounting, and college basketball teams, clearly the manifestations and indicators of those efficiencies vary markedly across settings. Other criteria may be more easily compared across settings, such as member retention and their reactions. In any event, we are pleased to say that most modern-day authors of *JAP* articles about work groups—just like their early *JAP* ancestors—emphasize the importance and relevance of outcomes in context in their investigations.

The remainder of this article is organized as follows. First we consider three substantive themes that have unified the work group literature over the years: (a) team tasks and structure; (b) member characteristics and team composition; and (c) team processes and emergent states. We selected these themes both because of their demonstrated relevance to team effectiveness and because of their frequency of appearance in *JAP* over the past century.[3] For each theme we illustrate how it has evolved and the resulting insights, and abstract what is currently known about work group functioning. We cite selected *JAP* articles per theme an era that we believe are particularly illustrative of the team research being done at the time. We admittedly are showcasing *JAP* work in particular, but we also make note of instances when important research appeared elsewhere.

Substantive Drivers

In contrast to the typical IPO framework depictions of work group relationships, we offer Figure 3 as illustrating the simultaneous and interrelated relationships among factors associated with team and individual outcomes. Specifically, we submit that team tasks and structure, members' characteristics and team composition, and team processes and emergent states are all dynamic entities with likely reciprocal relationships with one another and team outcomes over time. Mapped to these primary domains, and their overlaps, are a number of often studied team constructs. Each of the three general categories is elaborated upon below.

Team Tasks and Structures

Team Tasks

The nature of the task is critical to the behavior of work teams. A number of task taxonomies have been advanced (e.g., McGrath, 1984), however, many of these concerned activities that are not likely to be salient within organizational contexts. Therefore, to structure this discussion we characterize tasks via a two dimensional framework crossing task scope with task complexity. *Task scope* simply refers to the number of component acts that go into accomplishing the task. *Task complexity* stems from three facets: (a) component complexity, (b) coordination demands, and (c) dynamic features of team tasks (Wood, 1986). C*omponent complexity* involves the amount of information needed for decision-making, as well as the number of skills needed for decision execution. *Coordinative complexity* refers to the level of interdependence between components parts of the task, particularly when different individuals are responsible for different components and hence, sequencing and timing are critical. Finally, *dynamic complexity* is the degree that components change over time. Collectively, these three combine to yield relatively simple to highly complex group task environments.

Descriptions of task design in the early days of *JAP* were rooted in the individualistic approach and advanced the idea that interdependence among workers was something that needed to be eliminated via appropriate top-down, formal design. Interdependence was seen as a source of inefficiency and errors. Johnston and Briggs (1968) concluded that team output was inversely related to member coordination and interaction. Briggs and Naylor (1965) went so far as to say "independence of operator functions, not interaction among operators, is emerging as the more desirable system engineering concept" (p. 391). Reasons why groups perform worse than individuals included problems such as inefficiency, errors, social distraction, unaccountability, pluralistic ignorance, social loafing, groupthink, conformity, group polarization, and interpersonal conflict (Campbell, 1968). Overlooked was the fact that comparing individual outcomes to those of teams required the use of relatively equivalent tasks for both. For such considerations, tasks had to simple enough to be done by individuals alone.

Meanwhile, the nature of work outside the pages of *JAP* was changing rapidly. Larger forces in Western societies were either

[3] Representative studies per era for each theme are presented in tables in the online supplement. We also present a complete listing of *JAP* articles from our literature search for each era, and word clouds derived from their abstracts.

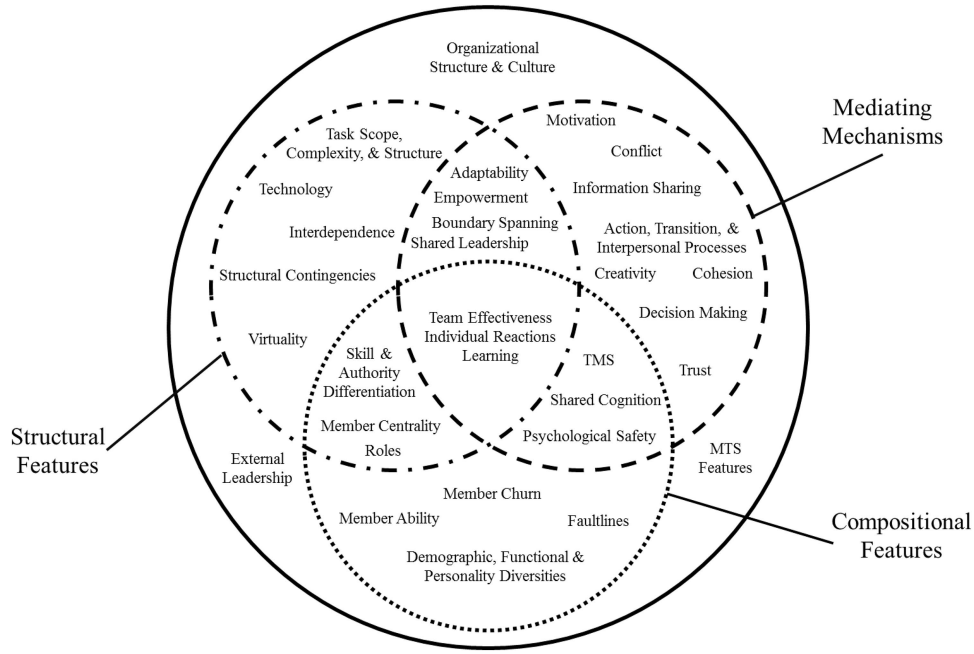

Figure 3. Construct domain for teams research.

eliminating low scope work via automation or, later on, offshoring that sort of work to locales where applied psychology was not a priority (Farrell, 2005; Levy, 2005). As work tasks became increasingly higher in scope and complexity, they often demanded the specialized skills of more than one person. The increased coordinative complexity of the work meant that it was performed differently depending upon the characteristics of other people working on the team. Correspondingly, the nature of tasks studied in *JAP* also grew larger in scope and complexity. Today, many of the tasks that are studied are so large and complex that the question of whether individuals might outperform groups is moot. Still, with the tasks of 1950 and 1960 at one end of the timeline, and more modern tasks as the other, the central role of the individual in the group remains evident throughout the intervening years in *JAP*. For example, as the tasks in *JAP* slowly became larger in scope and complexity, the question regarding groups versus individuals shifted to the question of "why groups often fail to out-perform their best member" (e.g., Schoner, Rose, & Hoyt, 1974). Note that this shifts the bar upward for groups relative to the question of "why do individuals outperform groups" but still implies that groups are primarily a source of problems.

In those middle intervening years (~1965–1990), the team tasks that dominated the pages of *JAP* included ones that could still be accomplished by individuals, but their scope and complexity increased to the point that the team could outperform at least some individuals. For a significant portion of time, the research questions addressed deficiencies within groups that explained why they underperform relative to their best member (Dennis & Valacich, 1993) or at the level of their worst member (LePine, Hollenbeck, Ilgen, & Hedlund, 1997). Eventually, this focus on the best and worst member gave way to formal theories that centered on how to identify differences in members' competencies and then to weight their contributions accordingly (Hollenbeck, Ilgen, Sego, Hedlund, Major, & Phillips, 1995). Still other approaches focused on contributions of members who held critically important roles within the team (Humphrey, Morgeson, & Mannor, 2009). This focus presumes the existence of formal and standardized roles that can be evaluated for their criticality to team effectiveness. Correspondingly, the amount of research published in *JAP* on the topic of differentiated team roles structure also grew over time.

Team Structure

Team structure refers to the means by which the team breaks down a large or complex task that exceeds the capacities of any one individual into smaller parts. Task decomposition creates a system where (a) different people do different task; and (b) these differentiated efforts are combined to produce a unitary product or service. Because small simple tasks do not demand task decomposition, the study of structure appeared later in the history of research on teams published in *JAP*. For our purpose here, we conceptualized team structure using Hollenbeck, Beersma, and Schouten's (2012) framework that features *skill differentiation*—the degree to which individuals on the team are readily substitutable for one another when it comes to task execution—and *authority differentiation*—the degree to which decision-making authority is vested in one single individual or is distributed among team members. Together, the two forms of differentiation create a microstructure for the team analogous to the horizontal and vertical elements of larger formal organization charts.

In terms of skill differentiation, research in the 1950s–1970s focused mainly on simple tasks that demanded no decomposition. In field studies, this included mechanical maintenance tasks, garment assembly, routine manufacturing, and other jobs similar to those that were automated or offshored in the 1980s. In laboratory contexts, common tasks included simple radar tracking, tinker toy construction, cross-word and jigsaw puzzles, and simple estimation tasks. How-

ever, over time, team tasks increased in scope and complexity. In field studies, all forms of task complexity increased. In terms of component complexity, the nature of the skills required to do the work increased, focusing on jobs such as chemical engineers, financial services, or geographically distributed workers in high tech jobs. For coordinative complexity, the work shifted from sequential interdependence where one skilled specialist handed off the work to other specialists, to cross-functional teams where individuals with specialized and nonredundant skills worked together. Finally, increased attention was devoted to complex dynamic task environments that disrupted performance routines. In contrast to what was believed in the 1960s regarding simple and static tasks, overly detailed, top-down, formalized designs actually reduced adaptability and introduced errors in dynamic organizational contexts (Stachowski, Kaplan, & Waller, 2009).

Complexity also increased in laboratory contexts where researchers turned to a wide array of computer-based simulations that replaced brainstorming tasks, small physical construction tasks or simple problem solving tasks of prior eras. These tasks required high levels of skill differentiation and were often scaled-down military simulations, reflecting the fact that much of this research was funded by the military (Schiflett, Elliott, Salas, & Coovert, 2004). These new tasks were also marked by the need to dynamically adapt to substantive changes in the task environment (Marks, Zaccaro, & Mathieu, 2000). This opened up opportunities to explore more complex questions related to functional versus divisional division of labor in teams (Hollenbeck et al., 2002), self-regulation of individual versus team goals (DeShon, Kozlowski, Schmidt, Milner, & Wiechmann, 2004), the creation of shared mental models (Mathieu, Heffner, Goodwin, Salas, & Cannon-Bowers, 2000), and the development of efficient transactive memory systems (Austin, 2003)—all questions that would not have been germane with the simple tasks employed in earlier eras.

Enhanced scope and complexity of team tasks made it impossible for single individuals to know everything that needed to be managed necessitating decreased authority differentiation. In the field, many of the teams were autonomous (Zhang & Peterson, 2011), self-managing (Stewart, Courtright, & Barrick, 2012), or exhibited shared leadership arrangements (Hoch & Kozlowski, 2014). Power dispersion within the team became an important predictor of team outcomes (Greer & Van Kleef, 2010). Research related to authority differentiation focused specifically on how to empower teams and help their members make their own decisions and plans (Chen, Kirkman, Kanfer, Allen, & Rosen, 2007; Mathieu et al., 2006). In addition, the universal leadership dimensions of initiating structure and structure made way for a third critical dimension, boundary spanning behavior, as the role of the team leader became more external to team operations (Luciano, Mathieu, & Ruddy, 2014).

Member Characteristics and Team Composition

Team composition concerns how the combination of members' characteristics relates to team process and outcomes (Levine & Moreland, 1998). Team composition work that has appeared *JAP* yields a representative picture of evolution of the topic in applied psychology over time (cf. Bell, 2007; van Knippenberg & Schippers, 2007). There have been both a growing volume of team composition research and shifts in focus of such work over the years. Notably, some team topics (e.g., member attitudinal diversity) simply did not appear in *JAP* prior to 1965, which is perhaps curious given the journal's focus on individuals during that period.

Team composition can be captured in terms of two general themes: what characteristics should be considered; and what are their distributional properties in the team. Members' knowledge, skills, abilities, personality, and demographic characteristics have been considered in *JAP* team composition studies as well as in the broader field (cf. Bell, 2007; van Dijk, van Engen, & van Knippenberg, 2012). As distributional properties, central tendencies (e.g., average), diversity, and minimum or maximum scores of members' characteristics have been the most investigated, with the former two receiving the most attention. Some of the oldest composition work in *JAP* focused on issues captured in Steiner's (1972) typology; for instance, is team performance more accurately predicted by average member ability/prior performance (additive model; e.g., Edwards, Day, Arthur, & Bell, 2006; LePine, 2003; Randall, Resick, & DeChurch, 2011), by the best member's ability/prior performance (disjunctive model; Triandis, Bass, Ewen, & Mikesell, 1963; Wiest et al., 1961), or by the lowest scoring team member (conjunctive model).

Research in the current era has moved beyond members' abilities and considered the compositional influences of their personalities (Barry & Stewart, 1997; Bradley, Postlethwaite, Klotz, Hamdani, & Brown, 2012; Fisher, Bell, Dierdorff, & Belohlav, 2012; LePine et al., 1997), gender (Bouchard, Barsaloux, & Drauden, 1974), cognitive style (West & Anderson, 1996), values (Randall et al., 2011), goals (Bunderson & Sutcliffe, 2003; Ellis, Mai, & Christian, 2013), affect (George, 1990), and task cognitions (Edwards et al., 2006). More recent studies also more frequently consider contingency relationships (e.g., the Personality Composition × Team Conflict interaction; Bradley et al., 2012).

The other mainstay of composition research in *JAP* has been the study of team diversity—How does member dissimilarity on an attribute affect team process and performance? This has included a variety of characteristics: personality (e.g., Barrick, Stewart, Neubert, & Mount, 1998; Humphrey, Hollenbeck, Meyer, & Ilgen, 2007; Reddy & Byrnes, 1972), information and perspectives (Hoever, van Knippenberg, van Ginkel, & Barkema, 2012; London, 1977), demographic attributes (e.g., Jackson, Brett, Sessa, Cooper, Julin, & Peyronnin, 1991; Kearney & Gebert, 2009), tenure (Nishii & Mayer, 2009), and educational background (Jackson et al., 1991; Shin & Zhou, 2007). Here too there is a clear shift from studies of main effects to studies of moderated effects. One variation of the diversity theme is faultlines where multiple forms of diversity align to solidify subgroups in teams (e.g., if demographic minorities are also less tenured and clustered in a particular functional area; Lau & Murnighan, 1998). Faultline studies have appeared in *JAP* (Bezrukova, Thatcher, Jehn, & Spell, 2012; Homan, van Knippenberg, Van Kleef, & De Dreu, 2007) along with a meta-analysis of their effects (Thatcher & Patel, 2011).

The picture to emerge from this research is that team composition in terms of central tendency and diversity matters to team process and performance—but in contingent ways (Bell, 2007; van Dijk et al., 2012). There are no simple answers to the question how to best compose a team. This depends on other dynamics, such as the extent to which other composition and contextual influences invite openness to differences as a source of diverse information and perspectives, or rather invite intergroup biases based on dissimilarities (van Knippenberg, De Dreu, & Homan,

2004). At the same time, Bell's (2007) meta-analysis showed evidence for effects of minimum and maximum member score models, which suggests that the currently dominant focus on central tendency and diversity may leave important issues unaddressed.

In an ideal situation organizations could recruit, select, and compose teams with an optimal mix of members' KSAOs. This will rarely be possible, and thus creates the need for compensatory interventions. One of the first team-related interventions reported in *JAP* dealt with team training. A variety of training conditions were addressed including training members versus the team as a whole (Briggs & Naylor, 1965; Johnston, 1966), types of training (e.g., brainstorming; Dillon, Graham, & Aidells, 1972), stimulus or response training (Briggs & Johnston, 1966), or cross training (Marks, Sabella, Burke, & Zaccaro, 2002). Research also addressed moderators of training such as cohesion (Cohen et al., 1960), task type (Ganster, Williams, & Poppler, 1991), and members' geographic distribution (Kirkman et al., 2006). Team training research has demonstrated significant benefits for team performance (Salas, DiazGranados et al., 2008).

Twentieth century *JAP* research demonstrated the importance of various features of team training contexts but failed to generate a unified framework of training effectiveness. That work did, however, contribute to a growing body of useful knowledge that culminated in major theoretical positions published in books (e.g., Swezey & Salas, 1992) or technical reports. After 2000, the *JAP* work captured more of the complexities of the training environment, such as multilevel designs, more complex tasks, assessing both individual and team level outcomes, and incorporating temporal factors by examining adaptive processes (Chen et al., 2005; Kirkman et al., 2006). Still, the frequency of publications appearing in *JAP* on training remained at about two articles per decade and the topics paralleled those appearing elsewhere.

Team Processes and Emergent States

The integration of individuals' efforts toward the accomplishment of a shared goal is the essence of teamwork. Such activities involve actions—things that members do—but in so doing, leave an impact on them in terms of influencing their personal and collective psychological states as all this unfolds over time. As defined by Marks and colleagues (2001), *team processes* are "members' interdependent acts that convert inputs to outcomes through cognitive, verbal, and behavioral activities directed toward organizing taskwork to achieve collective goals," whereas *emergent states* are "properties of the team that are typically dynamic in nature and vary as a function of team context, inputs, processes, and outcomes" (p. 357). Notably, many forms of team dynamics were either not present in *JAP* during the early era, or research was framed in different ways (e.g., coding noise used to describe differences among participants' understandings vs. shared mental models, cf. Macy, Christie, & Luce, 1953; Mathieu et al., 2000).

Processes

Marks et al. (2001) developed a taxonomy of processes that included three superordinate categories: transition, action, and interpersonal. During transition phases, team members reflect on previous performances and plan for future work. Such activities include mission analysis, goal specification, and formulating strategies. Later, during action phases, members concentrate on task accomplishments, monitoring progress and systems, and coordinating with, monitoring, and backing up their teammates. Last, the interpersonal category included conflict management, motivation-confidence building, and affect management all of which are salient across episodic phases. LePine, Piccolo, Jackson, Mathieu, and Saul (2008) conducted a meta-analysis of process correlations and found support for this hierarchical arrangement, whereas Fisher (2014) distinguished between taskwork and teamwork planning efforts, and associated them with subsequent action and interpersonal processes, respectively.

In terms of transition processes, Sperry (1974) found that conveying higher expectations during planning yielded improved team performance levels, whereas Weingart (1992) found that team task component complexity influenced group performance as mediated by members' planning and efforts. Moreover, Mathieu and Rapp (2009) found that the quality of team charters (which have members lay out team roles, responsibilities, and how they plan to function as a team), had a powerful effect on team performance trajectories over time—especially when paired which high quality task planning. Team after action reviews have long been found to lead to better subsequent team processes, states, and performance (Torrance, 1953; Villado & Arthur, 2013). Clearly diagnosing reasons for their previous performances and developing strategies for the future pays dividends for teams in terms of better action processes and subsequent performance.

Coordinating members' actions has been a tenant of effective teamwork since the midera of group research in *JAP* (e.g., Johnston, 1966) and remains so today (e.g., Fisher, 2014). Other forms of action processes, such as monitoring resources (Hollenbeck, Ilgen, Tuttle, & Sego, 1995; Kidd & Christy, 1961), progress toward goals (e.g., Rapp, Bachrach, Rapp, & Mullins, 2014), or teammates (e.g., De Jong & Dirks, 2013; Kolbe et al., 2014), as well as backup behavior (e.g., Barnes et al., 2008; Porter et al., 2003) and information exchange and integration (Homan et al., 2007; Mesmer-Magnus & DeChurch, 2009), have all evidenced positive correlations with team outcomes. Although there have been a number of important moderators of such effects, generally speaking, to the extent that teams exhibit better action processes they are more effective.

Team interpersonal processes have also been widely investigated in *JAP*. Notably, the content domain of interpersonal processes and various emergent states overlap almost completely (e.g., conflict, motivation). The difference, albeit subtle, is that Marks et al. (2001) referred to actions that team members may take to manage such states (e.g., conflict management, motivational encouragement) whereas the levels of such variables are more appropriately referred to as emergent states. For example, Marupping and Agarwal (2004) advanced a theory of how teams could employ different virtual technologies (i.e., align task-technology fit) to manage different interpersonal processes effectively. With that distinction in mind, Rahim and Magner (1995) distinguished five different techniques to manage interpersonal conflicts, and Behfar, Peterson, Mannix, and Trochim (2008) demonstrated that effectively doing so yielded benefits in terms of enhanced team outcomes. Ziller (1958) found that the manner in which teams self-organized their activities impacted their morale and confidence. Sy et al. (2005) reported a mediational contagion model

whereby leaders' moods were transmitted to members' moods and thereby to action processes. Cole, Walter, and Bruch (2008) illustrated that, when revealed through nonverbal behavior, dysfunctional behavior leads to negative team affective tone and emotions, and thereby to poorer performance.

In sum, the evidence over the years in *JAP* and elsewhere (see LePine et al., 2008 for a meta-analysis) has made clear that (a) different team processes are linked with one another over time; (b) the different processes are each associated with important team outcomes; and (c) different mechanisms can be employed to enhance such processes. Notably, work on team processes has mostly adopted the groupy approach and incorporated contingency factors such as structural arrangements, leadership styles, compositional mixes, and intervention techniques as antecedents or moderators related to how members orchestrate their interactions.

Team Emergent States

Marks and colleagues (2001, p. 357) described *emergent states* as "cognitive, motivational, and affective states of teams [that are] . . . dynamic in nature and vary as function of team context, inputs, processes, and outcomes." Importantly, such states may reside at the individual (e.g., commitment, motivation, satisfaction) or group (e.g., morale, affective tone, conflict) levels of analysis, making this fertile ground for the advancement and testing of multilevel theories of team functioning and effectiveness (House, Rousseau, & Thomas-Hunt, 1995).

Chen and Gogus's (2008) differentiation between *motivation* (of members) in teams versus (collective) motivation of teams, nicely captures this research domain as represented in *JAP*. The volume of work is much greater in the former (in teams—individualistic) approach than the latter (of teams—the groupy) approach. Individualistic motivation in groups have come in the forms of desire to participate (e.g., Willerman, 1953), motivation and brainstorming contributions (Dillon et al., 1972), and peer feedback influences on individual members' motivation and group-related attitudes (Druskat & Wolff, 1999). Pritchard et al. (1988) modeled the influence of group goal setting, incentives, and feedback on team members' understanding of contingencies between their behavior and valued outcomes on the job. Collective motivational constructs such as morale (e.g., Jerdee, 1964), confidence (e.g., Deep, Bass, & Vaughan, 1967; Sperry, 1974), efficacy (e.g., Gully, Incalcaterra, Josh, & Beaubien, 2002; Hirschfeld & Bernerth, 2008), potency (e.g., Sosik et al., 1997), empowerment (e.g., Mathieu et al., 2006; Seibert, Wang, & Courtright, 2011), and others in the groupy transition have appeared consistently in *JAP* over the years. In both approaches, motivational constructs related positively to individual- and group-level valued outcomes.

With the beginning of the 21st century, the nature of the work on team motivation, both as a context and as a phenomenon itself experienced some significance changes. Although the work continued to investigate motivation in teams, a greater appreciation for the complexities of behavior imbedded in teams and organizations, as well as evolving over time emerged (cf. Chen, Thomas, & Wallace, 2005; Chen et al., 2007; DeShon et al., 2004). Research is getting beyond the point of simply recognizing the complexity of behavior in the multilevel systems, to doing work that addresses that complexity—and *JAP* is a prime outlet for much of this work.

Team cognitive states such as shared mental models (e.g., Marks et al., 2002; Smith-Jentsch et al., 2005) and transactive memory systems (e.g., Austin, 2003; Lewis, 2003) have evidenced significant correlations with team processes and outcomes. Summing up work in this area, DeChurch and Mesmer-Magnus (2010) concluded "team cognition has strong positive relationships to team behavioral process, motivational states, and team performance [and] . . . explains significant incremental variance in team performance after the effects of behavioral and motivational dynamics have been controlled" (p. 32).

Team affective states linked directly to, or as moderators of other drivers of, team outcomes, have included affective tone (e.g., George, 1990), psychological safety (e.g., Bradley et al., 2012), cohesiveness (e.g., Beal, Cohen, Burke, & McLendon, 2003; Cohen et al., 1960; Tziner & Vardi, 1982), and procedural justice climate (e.g., Morrison, Wheeler-Smith, & Kamdar, 2011; Yang, Mossholder, & Peng, 2007). This line of work has been flourishing in recent years with meta-analyses supporting general linear relationships, and modern-day investigations adopting more multilevel designs and testing contingency relationships.

Team building has historically been a primary intervention aimed at enhancing team interpersonal processes and states (see Klein et al., 2009). For example, Bouchard (1972) found that getting members to identify more with the task (synectics) led to better group problem solving than did brainstorming techniques. Deep et al. (1967) took members who had participated in sensitivity training groups and either kept them intact or mixed them with members who received the same training in different groups. Interesting, the intact teams reported greater cohesiveness, openness, and ease of interactions but actually performed worse in a subsequent simulation than did the mixed groups. Druskat and Wolff (1999) examined the influence of peer developmental feedback in self-managed groups and found significant lasting positive effects on members' group-related attitudes. Eden (1985) conducted a randomized field experiment of a team development intervention and found that while participants raved about its value, there was little to no apparent benefit. And Marks et al. (2000) found that team interaction training enhanced members' shared mental models and thereby team performance, especially in novel environments.

In sum, *JAP* research supporting the role of team processes and emergent states as critical mediating mechanisms linking team composition and situational factors with team and individual outcomes is abundant and mature, with numerous supporting meta-analyses. *JAP* authors have also given some attention to team building type interventions, which have demonstrated only modest influences on team performance, but have been associated with enhanced interpersonal processes and members' reactions (Klein et al., 2009). What is not as clear, however, is the relative unique contributions of different processes, and different states, to the prediction of team outcomes at different times. Those same meta-analyses have shown that processes and states are typically very highly correlated with one another (e.g., DeChurch & Mesmer-Magnus, 2010; LePine et al., 2008). No doubt that this is partly attributable to the common practice of measuring both types of constructs using members' survey responses gathered on few occasions. More advanced research designs, measurement protocols, and analytic techniques are beginning to be used and should

all help to disentangle the underlying—time dependent—relationships among these various dynamics.

Discussion

Summing up the Past Century

From a historical perspective, *JAP* was late to the scene of team research arriving more than a quarter century after the Hawthorne studies. When team research began to appear in the journal it mostly adopted the *individualistic* perspective using the group as a context for identifying individuals' characteristics or facilitating their behaviors. It was a full 50 years or so after Hawthorne before the work in *JAP* began to pursue the *groupy* approach and to devote substantial attention to teams as the focal unit of analysis. But the past 25 years have been different and an exciting time for teams research, especially that appearing in *JAP*.

Much of this change was triggered by a major reorientation of group research from social psychology to organizational settings, the aftershocks of which continue today. The most obvious effect was on the sheer volume of research as captured in the number of articles published per year. A number of factors contributed to the exponential growth and we suggest that the confluence of three were particularly important. First, the primary unit of analysis for work shifted more and more from that of individuals to that of collectives pursuing a common goal. The focus of *JAP* on work behavior made it a natural location for team research.

Second, researchers began to take seriously the complexity of work team behavior. Up to that time there was a general acceptance of teams as products of the dynamic interaction of three component systems—social/interpersonal, technical/task, personal/individual, but there was a tendency to overlook a number of critical implications of this state of affairs. For example, work teams were studied at one point in time without addressing the implications of the static design on the understanding of a dynamic process.

Third, methods and research designs were being developed and/or were becoming more available that could address multilevel dynamic phenomena more directly than had been done in the past. As a result of the confluence of teams becoming the basic building blocks of modern organizational designs, and the development of research designs and methods for studying complex dynamic phenomena that the teams represent, the nature and direction of team research and development has been altered in ways that are only beginning to be understood. Team-level constructs have increasingly become the focal level for theory building and the crossroads for many investigations in *JAP* and elsewhere. Adopting the meso-paradigm (House et al., 1995; Mathieu & Chen, 2011) and Hackman's (2003) notion of bracketing, team features have been modeled as important antecedents and moderators of individual-level relationships. Rather than merely using a team task as a context for individual-level relations, features of teams such as their structure, leadership forms, compositional arrangements, planning, coordination actions, psychological safety, and so forth have been indexed as continuous variables and modeled simultaneously with individual-level relations as related to individual-level outcomes.

Moreover, group-level investigations have associated aggregate features (e.g., task features, team structures), along with composition and compilational constructs (e.g., members' collective ability, diversity faultlines), with team dynamics in the forms of processes and emergent states, and thereby with team outcomes. Most recently, teams have been increasingly used as the lower-level in investigations that have modeled larger contextual influences on team functioning and outcomes in multiteam systems (e.g., Davison, Hollenbeck, Barnes, Sleesman, & Ilgen, 2012; DeChurch & Marks, 2006). Contingent relations have become the norm and there is a greater appreciation of task and contextual influences.

It is important to note that team research appearing in *JAP* and elsewhere has not only advanced our scientific understanding of group phenomena, but also yielded tools and techniques to enhance the effectiveness of real-world teams and the welfare of their members. Our measurement has matured (e.g., Kendall & Salas, 2004), and volumes have been written about improving team effectiveness through training (e.g., Salas, DiazGranados et al., 2008), development (e.g., Eden, 1985; Klein et al., 2009), and other interventions such as planning (e.g., Weingart, 1992).

Looking Forward

Methodological opportunities. We believe that we are entering a new era for team research. Much has been learned from both the individualistic and groupy approaches, and the IPO model that has guided many valuable investigations. But significant changes are needed if we are to advance our science of teamwork. These include more formally incorporating temporal issues. Nearly every variable in team effectiveness models may change over time, and for a variety of reasons relationships may wax and wane over time. Couple that with the fact that few variables are uniform throughout the team, and theoretical, methodological, empirical, and application developments will all be needed.

First and foremost, there is a need to revisit the fundamental temporal nature of team evolution and dynamics. Such investigation may benefit from a grounded theory approach to the study of teams (Edmondson & McManus, 2007). Grounded theory emanates from a deep exploration of a particular context and seeks to derive salient concepts and suggest new theory (Glaser & Strauss, 1967). Illustrative and comparative case studies also serve to highlight new concepts and relations that may be glossed over by the dominant survey based research of today. Second, as new insights emerge and evolve to the point of being tested, new quantitative-oriented measurement techniques, methodologies, and analyses need to be developed and leveraged.

Beyond qualitative approaches, social network analysis offers a powerful avenue for the future. Ironically, network techniques were among the earliest quantitative approaches to the study of communication and coordination patterns in group research (Bavelas, 1948; Leavitt, 1951; Lodahl & Porter, 1961). The modern-day network analysis techniques can integrate the individualistic (i.e., node attributes) and groupy (network patterns or structure) approaches (Borgatti & Foster, 2003). Moreover, network approaches relax the assumption of uniform variable patterns within a team and are designed specifically to detail patterns of such linkages. Network approaches have been adopted for the study of team external leaders (Balkundi, Kilduff, & Harrison, 2011), shared leadership (Wang, Waldman, & Zhang, 2014), processes (Crawford & LePine, 2013;

Kennedy & McComb, 2014; Li et al., 2015), shared mental models (Mathieu et al., 2000), stress and communications (Kalish, Luria, Toker, & Westman, 2015), and team composition (Mathieu, Tannenbaum, Donsbach, & Alliger, 2014; Tröster, Mehra, & van Knippenberg, 2014), to name just a few. Many sophisticated analytic tools already exist (Borgatti & Foster, 2003; Carley, 2003), but approaches that accommodate multilevel, multiplex, and dynamic features are just beginning to be developed (Zappa & Lomi, 2015).

Although network approaches offer a powerful method for advancing teams research, historically they fell into disfavor because of their intensive data requirements. Having team members complete survey instruments is a laborious task and precludes the collection of very many substantive variables or repeated administrations. Certainly multi-item psychometric scale versions of network measures are infeasible. Moreover, having observers watch live or videoed team interactions is both intrusive and challenging from a logistical standpoint. Yet newer measurement protocols may help to overcome these hurdles and liberate the study of teams as small complex systems. For example, approaches such as computer-aided textual analysis (Pollach, 2012), streaming physical and spatial data such as that yielded by wearable sensors (Chaffin et al., 2015; Voirin, 2015), and emotional facial recognition techniques (Liu & Maitlis, 2014) all offer great promise for generating continuous streams of team-related data thereby enabling complex longitudinal analyses of different types (Ancona, Okhuysen, & Perlow, 2001; Kozlowski, 2015; Ployhart & Vandenberg, 2010). They also raise a host of new concerns including temporal unitization, intrusiveness, privacy, and ethical considerations. However, leveraging such continuous streams of data is the key to unlocking the survey and human observation shackles limiting progress in teams' research.

It has been said that the nature of teams are changing (Tannenbaum, Mathieu, Salas, & Cohen, 2012) and perhaps traditional definitions and approaches should be revised. Edmondson (2012) advocated moving away from traditional views about teams in lieu of "teaming" whereby diverse employees are brought together as needs demand, and then are disbanded just as quickly. She suggests that the fluidity of teaming allows organizations to better adapt in chaotic business environments, reducing the utility of the "team" as a meaningful unit of analysis. We agree but are not ready to abandon the concept of teams as we know it quite yet. Teams are an arrangement of people brought together to accomplish one or more common goals, are interdependent, and function in organizational contexts. That definition is useful and provides boundaries for the advancement of both science and guidelines for practice. What should be recognized, however, is that employees may well need to effectively do "teaming" in other arrangements, such as communities of practice, projects, agile software arrangements, and other fluid temporary units. Understanding and influencing the future of work arrangements will be both challenging and exciting, and we have no doubt that teams and teaming will play prominent roles.

Opportunities related to team tasks and teams structures. It is clear that team tasks play a critical role in the nature of contingency relationships associated with team effectiveness (Hollenbeck et al., 2012; McGrath, 1984). Task scope and complexity dictate the types of team structures (e.g., skill and authority differentiation) most suitable, as well as the form (e.g., external vs. shared arrangements) and nature (e.g., directive vs. empowering) of effective leadership. Task structures also dictate the suitability of different compositional arrangements. For example, disjunctive tasks beget an individualistic approach suggesting that teams may be effective if staffed with a single expert who can single-handedly carry the load, or whereby weak members' shortcomings can be compensated by stronger members. In contrast, conjunctive tasks entail a groupy approach whereby the mix of employees, whether that implies, for example, homogeneity of skills levels, functional diversity, or optimizing core versus peripheral members' fits, are at a premium. From both a theoretical and an applied perspective, the groupy approach presents far greater demands, and challenges for us to think much harder about how to optimize fit—both within- and across-teams in an organization.

All this means that future team researchers should feature task characteristics more prominently than we have in the past (Kozlowski & Ilgen, 2006). Yet we believe that the challenge is, in fact, more complicated than it appears. To date, researchers have mostly treated team tasks as though they are uniform and static over time. Certainly that was the case when sampling sewing machine operators, or wiring room employees at Western Electric. But modern-day team tasks are anything but uniform and static. For example, consider a present-day project team arrangement where members come together initially and may be highly interdependent, yet later fragment into subgroups with some individual contributors. This restructuring may reoccur many times as task demands shift over the course of a project or service. The team task is a multidimensional fluid entity that needs to be treated in a complex time-dependent fashion (cf. Hollenbeck et al., 2012). Given that task demands determine the importance of so many other drivers of team effectiveness, we need a paradigm shift.

This paradigm shift may even entail looking beyond independent and standalone teams as the formal unit of analysis for structuring work. That is, just as individual job design gave way to team-based designs as the scope and complexity of work in the real world increased, it is very likely that further increases in scope and complexity may require a level of skill differentiation beyond what can be accomplished in a single team. The literature on teams has long recognized the principle that "large teams are bad teams" because of problems associated with process losses attributable to coordination and motivation challenges (Hackman, 2002). Thus, if the scope and complexity associated with some task requires as many as 20 specialized people, composing a single large team is likely to cause more problems than it solves.

Mathieu, Marks, and Zaccaro (2001) advanced the notion of multiteam systems (MTSs) to deal with such circumstances. "Conceptually, MTSs emerged as a new unit of inquiry and analysis in which a tightly coupled network of teams need to coordinate their efforts to achieve one or more goals in addition to those of the component teams" (Luciano, DeChurch, & Mathieu, in press, p. 3). MTS designs recognize that effective mutual adjustment, in real time, among numerous members of a single large team is not feasible (Davison et al., 2012). Thus, rather than composing a single 20-person team to accomplish a task, several more specialized teams may constitute an MTS and coordinate their cross-team interactions through limited

boundary spanning mechanisms or an integration team (Davison et al., 2012; DeChurch & Marks, 2006). Research on teams embedded in MTSs has documented that much of what we believe are best practices in stand-alone teams that work independently fails to generalize to teams working collectively in MTSs (Lanaj, Hollenbeck, Ilgen, Barnes, & Harmon, 2013; Marks, DeChurch, Mathieu, Panzer, & Alonso, 2005).

Opportunities related to member characteristics and team composition. Team composition is likely to remain a key topic in the future. The field will benefit if the focus on composition as a static influence and as an independent variable, is complemented with a more dynamic focus on composition as something that may change over time. Organizations have become more demographically diverse and team work has seen a shift to more complex knowledge work that demands cross-functional teams. We cannot simply assume that what holds for cross-sectional comparisons of more versus less diverse teams translates directly to changes in team composition over time (e.g., dominant majority groups may feel increasingly threatened as traditional minority groups gain in size).

Teams often change membership over time for a variety of reasons (Edmondson, 2012). This may involve both changes in team size and in member characteristics. We cannot assume that what we know from cross-sectional comparisons translates to the effect of such changes over time. For example, membership change may trigger faultlines between longstanding "core" members of a team and newcomers, particularly if the arriving members are also different in other ways (e.g., demographical, educationally, etc.). We know surprisingly little about issues associated with membership churn, such as the reason(s) for members leaving (e.g., voluntary vs. involuntary turnover), whether or not they are replaced, the similarity between new and departing members, or the number or rate of members leaving over time. Research has also not fully considered how team memberships may change *as a consequence* of previous team processes or outcomes, despite the prevalence of such phenomena among real-world teams. Yet all of these and other factors likely affect team dynamics in ways not captured by cross-sectional comparisons of teams with stable compositions.

Opportunities related to team processes and emergent states. From the earliest work group investigations to today, team processes and emergent states have been conceptualized as dynamic phenomena. Unfortunately, scholars have all too often envisioned and tested IPO models as linking static antecedents and mediating mechanisms with various team and individual outcomes (Cronin, Weingart, & Todorova, 2011; Kozlowski & Ilgen, 2006). Yet teams evolve, develop, and change over time. They do different things at different times, and earlier successes and failures change the nature of future performance challenges. Ineffective teams have ground to make up whereas high performers can leverage their position and exploit their advantage (Mathieu & Rapp, 2009). In short, there is a path dependence to teamwork that implies we really cannot fully appreciate or understand the critical variances that are involved unless we take time—in its various incarnations—into account (Cronin et al., 2011).

Team emergent states do just that—emerge over time. Here too, the time dependent nature of interactions has important implications for team effectiveness and member welfare. Getting off to a good start may provide a foundation (e.g., high efficacy, psychological safety) that can help sustain a team through later hard times, whereas early struggles (e.g., ill-formed plans, early conflicts) may serve to derail a team. When a team event occurs may be as important as what the event is. Early conflicts or disagreements during a crucial transition period are likely to be far more devastating than ones that occur later on or during down times (Jehn & Bendersky, 2003). Feedback processes, such as after action reviews, require enough team experience to be meaningful but cannot wait so long as to be confounded by multiple overlaying events. In short, team researchers need to leverage and advance theories of emergence and temporal dynamics, whether they are developmental, episodic, dialogue acts, event-based, or derived from other bases. These may be microanalyses of subtle facial signals during team meetings, historical periods in the life span of start-up teams, or anything in between. But we need to take seriously how time, and what it represents, plays a significant role in our theories, research designs, and applications of the science of teamwork. The time is rife for such advancement, as new methods of measurement and analyses are rapidly developing that can enable such work. But data alone will not yield insights without concomitant theoretical advancements. We expect and encourage such development, and we anticipate that much of it will play out in the *Journal of Applied Psychology* in the century to come. Stay tuned for the next centennial issue.

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