# Three Conceptual Themes for Future Research on Teams

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Tannenbaum, Mathieu, Salas, and Cohen (2012) identify three change themes—dynamic composition, technology/distance, and delayering/empowerment—that are affecting the nature of teams and discuss future research directions within each thematic area. They acknowledge that these emerging research needs may require new theories, research methods, and analyses, and describe a few specific approaches that may hold promise but focus their attention largely on describing the substantive issues and questions research should target going forward. We do not dispute that these themes are important—they are garnering substantial research attention (see Bell, 2007; Chen & Tesluk, in press; Kirkman, Gibson, & Kim, in press). However, they are among many issues that are in flux and important to consider in future research on teams. In this commentary, we adopt a broader perspective aimed at highlighting several conceptual, rather than substantive, themes that we believe can focus and leverage future research on the changing nature of teams: (a) multilevel influences, (b) emergence, and (c) temporal dynamics. Sophisticated research questions and designs that encompass these conceptual issues will advance our understanding of the themes identified by Tannenbaum et al. as well as other emerging issues surrounding teams.

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## Conceptual Themes

Organizations, teams, and individuals are linked together in a multilevel system. Individuals are nested within teams, and teams are in turn nested within and connected to organizations. The result of this nesting is that team phenomena are the product of *multilevel influences*—both top down and bottom up. The organizational context shapes and constrains team responses, and the team itself serves as proximal context for its members. As Tannenbaum et al. discuss, for example, organizational downsizing and delayering can influence team structures as well as serve as a lens through which organizational members interpret teaming initiatives. At the same time, characteristics of the team context, such as normative expectations and climate perceptions, emerge from the dynamic interactions of the members of the team. In addition, many collective phenomena, such as team learning, originate within individual members but through interactions evolve and emerge at the team level. Thus, research aimed at understanding and investigating team phenomena must focus on multiple levels—individual, team, and the higher level context—and the interplay within and between these levels. Both research and practice must better account for the theoretical, measurement, and data analytic issues relevant to a multilevel perspective of teams. In addition, as multilevel team research grows, there is a need to move beyond simple aggregation models to encompass more dynamic interplays across the different levels.

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A second and related conceptual theme is that team phenomena are *emergent*. Kozlowski and Klein (2000, p. 55) state, ''A phenomenon is emergent when it originates in the cognition, affect, behaviors, or other characteristics of individuals, is amplified by their interactions, and manifests as a higher-level, collective phenomenon.'' There are two distinct types of emergence—composition and compilation. Composition types of emergence apply to phenomena that are created through linear, convergent processes. The content and structure remain the same, but the referent—individual or team—changes. In contrast, compilation types of emergence apply to phenomena that are formed via divergent, configural, or patterned processes. Diverse content is combined across team members to form a meaningful whole. Compilation constructs are functionally equivalent across levels, but the structure is different. Theory and research in this area have often not been explicit with respect to the type of emergence that characterizes the team phenomena under investigation, and composition processes have received significantly more attention than compilational processes. As teams become more fluid, dynamic, and complex, however, it becomes increasingly necessary to consider more sophisticated conceptualizations of emergence. Perhaps more importantly, research needs to move beyond treating emergence as a static phenomenon and instead needs to examine it as a process that unfolds over time (Kozlowski, 2012).

Finally, virtually all team phenomena are characterized by complex *temporal dynamics*. Team learning and development entail a dynamic progression, which includes not only linear but also episodic and cyclical elements. Teams engage in task episodes that occur over time and involve sequences of transition and action. Collective efficacy, mental models, and many other team phenomena emerge from the individual to the team level via complex interaction patterns that unfold over time. Tannenbaum et al. note that research has devoted little attention to the temporal dynamics surrounding team composition, yet this is also true for *virtually every other area of team research!* Time has often not been adequately represented in theory, and teams are often studied using static research designs. To understand team effectiveness, we need to focus more attention on the dynamic processes that underlie it.

## Recommendations for Future Research

Our three themes—multilevel influences, emergence, and temporal dynamics—are conceptually distinct but entwined. Addressing them in future research will necessitate an integrated research strategy. Here, we concisely outline four integrated recommendations to advance research on the changing nature of teams consistent with our themes.

First, multilevel team research needs to move beyond the use of static, cross-sectional research designs. Top-down (contextual) and bottom-up (emergent) influences are complementary. Interactional processes within a team create team phenomena and structures that serve to shape and constrain subsequent individual phenomena. Technology, for instance, can shape team member interactions (e.g., communication and coordination), which in turn underlie the emergence of team phenomena, such as trust and cohesion, that may influence future patterns of technology use in the team. However, with the exception of qualitative investigations, there are very few efforts to study this sort of complementarity. Although contextual (top-down) influences have received significant attention in team research, emergence has received much less attention. When emergence is considered, it is rarely examined directly and instead is treated in a static fashion, after the fact. Moreover, limited forms of emergence have been investigated, with most of the attention directed at composition constructs. This is due, in part, to the fact that team research has been dominated by the use of survey research and cross-sectional designs.

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We need more attention to emergence and process dynamics, and this necessitates more sophisticated research designs. One example is research by DeShon, Kozlowski, Schmidt, Milner, and Wiechmann (2004), who evaluated a multilevel homologous model of individual and team regulation. Their research showed that multilevel regulation processes emerged from the dynamic interactions of team members as they pursued individual and team goals. Subsequent research by Chen, Kanfer, DeShon, Mathieu, and Kozlowski (2009) demonstrated that team regulation processes, having emerged, served as structures that exerted a cross-level effect on individual level. Thus, the process of emergence creates structure that shapes subsequent processes.

Second, team research needs to employ richly articulated multilevel data structures. Capturing the interplay across multiple levels, emergence processes, and system dynamics is obviously complex. At a minimum, team situations entail three levels: team, individual, and time. There may also be other levels. As noted earlier, teams are often embedded in organizational systems with many higher, nested levels. Given this reality, many scholars have called for a ''bracketing'' approach that identifies constructs one level above and one level below the phenomenon of interest (Hackman, 2003). Such an approach necessitates richly articulated research designs that capture key substantive levels and a temporal structure to the data. At a minimum, it means data have to be acquired from team members and team leaders, contextual factors at a higher level (between team factor and higher level leaders), and the data have to be obtained repeatedly over meaningful time frames. This, again, necessitates that we move beyond single-source surveys and that we leverage emerging sources of data (e.g., e-mail exchanges, share sites) to gather objective, behavioral data on teams (Kozlowski, 2012).

Third, researchers need to leverage more sophisticated measurement strategies and analytical approaches to model the dynamic relationships and patterns of emergence that underlie complex team phenomena (Kozlowski & Chao, 2012). Hanges and Wang (in press), for example, describe how computational modeling can be used to study complex adaptive systems. This technique allows researchers to build a computer model that consists of the elements of a system as well as the linkages among these elements and feedback loops in the system. The patterns of emergent behavior generated by the computer model can be compared to the patterns of behavior observed in the data. Computational modeling and simulations allow teams researchers to move beyond unidirectional causal relationships and examine the dynamic relationships within and between levels that undergird team phenomena. As another example, Hausknecht and Holwerda (in press) borrow concepts from statistical mechanics to develop a measurement strategy that captures the effects of multiple characteristics of group turnover, including time dispersion, positional distribution, and the proficiencies of members who leave, stay, and join the group, on a group's collective capacity over time. This measurement strategy can be used by teams researchers to examine many of the substantive issues surrounding dynamic team membership raised by Tannenbaum and colleagues.

Finally, organizations have to play a more central role in supporting and promoting team effectiveness research if they wish to reap the benefits. As Tannenbaum et al. note, team-based practices need to evolve to address the emerging needs and challenges that teams face in today's organizations. Targeted research can help inform and guide this evolution, and certainly some of this research can be conducted in the laboratory. However, to fully address the themes we have highlighted in this article, teams researchers need access to contextually rich field settings and the opportunity to gather data at multiple levels over extended time frames. To understand the impact of socioeconomic trends such as organizational downsizing and delayering on team structures and functioning, we need to be

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able to conduct studies that transcend a single organization and to engage in systematic, rather than thematic, programs of research that more rapidly advance scientific knowledge. Ultimately, organizations and researchers need to work together to identify and address the challenges created by the changing nature of teams.

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