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Team Performance Archetypes: Toward a New Conceptualization of Team Performance Over Time

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Abstract

We examine the concept of team performance and propose a framework to understand patterns of change over time. Following a literature review on team performance (focusing on empirical articles published between 2007 and 2017) and drawing on Greek and Roman mythology, we identify five team performance trajectories: "Jupiter" (consistently high performing), "Neptune" (relatively steady, average performance), "Pluto" (low performing), "Icarus" (initially high performing, with a downward spiral), and "Odysseus" (initially low to midrange performing, with an upward spiral), which we refer to as "team performance archetypes." We discuss how they might be used in conjunction with growth modeling methodology to help facilitate theory building and data collection/analysis with respect to team performance. In addition, we discuss the future research implications associated with using the archetypes to help conceptualize patterns of team performance over time.

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Although a decade has passed since Mathieu, Maynard, Rapp, and Gilson's (2008) recommendation that teams researchers "embrace the complexity" of team dynamics (p. 461), relatively few studies have attempted to understand the ways in which teams change over time (Mathieu, Hollenbeck, van Knippenberg, & Ilgen, 2017). As Mathieu et al. (2017) wrote,

> [S]ignificant 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. (p. 460)

We agree with Mathieu et al. (2017; see also Cronin, Weingart, & Todorova, 2011, and Shuffler, Diazgranados, Maynard, & Salas, 2018). One issue within the team literature may be the prevalence of theories that advance a set conception regarding the developmental path teams must take to perform (e.g., Tuckman & Jensen, 1977); another issue may be the myriad difficulties associated with conceptualizing and implementing longitudinal studies that accurately reflect the dynamic phenomenon of interest (cf. Luciano, Mathieu, Park, & Tannenbaum, 2018). In our practical and empirical experience, however, we have observed considerable variety in how team performance, in particular, changes over time within and across teams. The recent use of growth modeling techniques to examine teams over time has begun to move the literature in this direction (see Collins, Gibson, Quigley, & Parker, 2016).

Our goal is to develop a new conceptual understanding of patterns of team performance over time to spur more future research that incorporates the temporal dimension of work team performance.[1] We begin with a brief review of the last decade of the team performance literature to assess whether and how the dimension of time is being taken into account. We find that previous research has focused on the prediction of levels of performance at the end of a team's life span or at the end of a performance episode (or set of episodes), without much consideration of the patterns of change in performance over time. We suggest that a new conceptual understanding of team performance over time—using team performance archetypes, with metaphorical nomenclature borrowed from ancient Greek and Roman mythology—will be helpful in spurring future research on team performance that takes into consideration temporal issues. As we define them, these archetypes are typical examples of

what patterns of change in team performance look like over three or more performance episodes (three is the minimum number required to constitute an empirical pattern; Chan, 1998). We then draw from the logic of growth modeling methodology to help illustrate the potential value of the archetypes for theory development and empirical advances. Last, we propose an agenda for future research, focusing on (a) the verification of the archetypes, (b) the exploration of facilitating conditions for the archetypes, and (c) the consideration of whether and how teams may shift or change archetypes.

We work within the bounds of three conditions. First, we define teams as two or more individuals who (a) socially interact; (b) possess one or more common goals; (c) are brought together to perform organizationally relevant tasks; (d) exhibit interdependencies with respect to workflow, goals, and outcomes; (e) have different roles and responsibilities; and (f) are embedded in an encompassing organizational system, with boundaries and linkages to the broader context (Kozlowski & Ilgen, 2006). Second, we focus on the team level of analysis, defining team performance as the task-related outcomes achieved by the team (e.g., Hackman, 1987). Last, our ideas are intended to apply to teams that have multiple, distinct performance episodes over time and that receive feedback on these episodes in real time. These episodes are "distinguishable periods of time over which performance accrues and feedback is available . . . They constitute the rhythms of task performance for teams" (Marks, Mathieu, & Zaccaro, 2001, p. 359). For example, a relevant performance episode for a sports team might be a game; for a consulting team, a project; and for a sales team, the completion of a major sales transaction. As we will discuss, these performance episodes will differ in their objective time spans; we argue, however, that the patterns that constitute archetypal team performance trajectories can be revealed irrespective of the objective length of the episode. Taking this longer term perspective means that we develop insights about team performance across episodes; we return to a more complete discussion of this issue following the review.

Team Performance Literature Review (2007-2017)

The last published review of the team performance literature, to our knowledge, is Mathieu et al.'s (2008) review of team effectiveness. Using McGrath's (1964) classic input–process–outcome (IPO) model and Ilgen, Hollenbeck, Johnson, and Jundt's (2005) input–mediator–output–input (IMOI) model, Mathieu et al. reviewed literature that touches on each of the linkages in the models, making two observations that help guide our review of the last 10 years of team performance literature. First, they found that team performance as a construct has not been as systematically addressed, as the focus has been

on "the left hand side of the equation (i.e., antecedents and mediating influences) . . . [resulting] in criterion measures, and in particular performance indices, [that] are often idiosyncratically and organizationally specific" (Mathieu et al., 2008, p. 415). Second, Mathieu et al. noted that numerous teams researchers, prior to their review, had called for a better understanding of temporal dynamics in teams (e.g., Ancona & Chong, 1999; Kozlowski, Gully, Nason, & Smith, 1999; Marks et al., 2001; McGrath, 1991); yet, still there was insufficient consideration of this in the literature. Below, we assess whether—since the publication of Mathieu et al.—these issues still apply, that is, (a) whether the "left-hand side of the equation" with respect to team performance has continued to dominate research and (b) whether recent studies continue to have underdeveloped theoretical conceptualizations of how team performance changes over time.

In terms of selection criteria for the review, we focused specifically on published manuscripts from 2007 to 2017 in major management and organizational behavior journals that include measures of performance (e.g., Courtright, McCormick, Mistry, & Wang, 2017) at the team level of analysis (see the appendix for a complete list of these journals). Using various databases (ABI/Inform, ProQuest, etc.), we searched for empirical articles that included the term "team performance" in the abstract within each of the journals during the decade in question. Notably, some articles included multiple studies. We scanned through each study within each article to make sure that the criterion variable examined was, indeed, a team-level performance measure provided by a source that was not the team itself (i.e., simulation scores, sales numbers, manager/leader/supervisor ratings). For parsimony, we excluded studies that focused on top management teams; we also excluded studies that considered creativity/innovation performance outcomes. This yielded 222 articles, 22 of which were meta-analyses. Within the 200 non–meta-analytic articles, we found 221 studies that met the above criteria for inclusion in the review.

We coded these studies for a variety of methodological details. To understand the dynamics and causality associated with team performance, we coded for (a) the timing of the data collection (i.e., whether the study was cross sectional or included lagged team performance outcome[s] collected after the independent variables; if a lag existed, whether multiple waves of lagged performance outcomes were captured; if multiple waves of performance were collected, whether growth modeling was used with respect to performance outcomes) and (b) the research design of the study (i.e., whether it was correlational, quasi-experimental, or experimental in nature; whether it included mixed methods). We also coded the studies for the type of team performance data used. Our categories included (a) objective performance

data (e.g., sales/financial performance indicators, scores on a simulation generated by the simulation itself, scores as compared with correct answers on decision-making tasks), (b) customer/client ratings of team performance, (c) supervisor/manager/leader ratings of team performance, (d) other external ratings of team performance (e.g., external judges or industry experts), and (e) instructor/professor grade or ratings. Last, we coded for the types of participants (students, employees, or athletes) and the types of teams using Sundstrom, McIntyre, Halfhill, and Richards' (2000) typology (production, service, management, project, action/performing, and advisory). Team types—and team tasks—were quite varied in the sample, and did not always fit clearly within the Sundstrom et al. (2000) typology. To account for instances where there was not enough information provided, or the author(s) deliberately chose a range of different types of teams working on different types of tasks, we classified teams as "mixed/unclear."

Table 1 provides a high-level, numeric summary of the included literature. The appendix provides greater detail on sample studies, methodologies, team types, and predictors of performance. Although this review is not intended to be exhaustive, two themes that address the issues identified by Mathieu et al. (2008) emerged from our examination of these articles.

Theme 1: Continuing Dominance of the IPO and IMOI Theoretical Models

The IPO and IMOI models are the most popular foundational structure for the studies we reviewed, leading us to conclude that they are alive and well in the team literature. The bulk of theoretical attention has continued to be on what Mathieu et al. (2008) refer to as the "left-hand side of the equation." Only 24% (54 total) of the included studies were cross sectional in nature (i.e., inputs, processes, emergent states, etc. collected at the same time as performance indicators). A notable trend among the included studies is that lagged outcome designs (wherein performance indicators are collected after other variables) have been most prevalent, with 76% of the scholarship we reviewed utilizing this approach to unpack the causal ordering of antecedents to performance (167 studies, as noted in Table 1). One example of this basic lagged outcome approach is Courtright et al. (2017), which considers the impacts of team charter quality, team conscientiousness, and task cohesion on team performance in undergraduate student project teams working through a 14-week semester. We found many other studies that use similar designs and analytic approaches (see the appendix). What is especially noteworthy is that most studies with lagged designs did not use multiwave or growth modeling approaches. Of the total studies included, just 11% incorporated a multiwave design, and only 2% used growth modeling.

Table 1. Methodological Themes in Empirical Team Performance Literature 2007 to 2017.

	Number of studies[a]	Percentage of studies
Timing of data collection		
Cross sectional	54	24
Lagged[b]	167	76
	- Of these lagged studies, 26 have multiwave performance	- Of these lagged studies, 15.5% have multiwave performance (11% of the overall total)
	- Of these multiwave studies, five use growth modeling	- Of these multiwave studies, 19% use growth modeling (2% of the overall total)
Research method		
Correlational	173	78
Quasi-experimental	5	2
Experimental	43	19
Mixed method[c]	6	3
Performance outcomes[d]		
Objective	92	42
Customer/client ratings	9	4
Manager ratings	81	37
Other external ratings	18	8
Instructor/professor rating	24	11
Participants		
Students	91	41
Employees	116	52
Athletes	14	6
Team types[e]		
Production	9	4
Service	41	19
Management	10	5
Project	64	29
Action and performing	66	30
Advisory	5	2
Unclear/mix/other	26	12

[a]The total number of included studies (n = 221) is greater than the number of empirical articles reviewed (200), as several articles included two or more studies.
[b]Lagged outcome studies include all studies where at least one performance point is collected after independent variables. Multiwave and growth modeling studies are included in the overall count of lagged outcome studies. Multiwave studies include growth modeling. Both multiwave and growth modeling coding refer explicitly to the consideration of team performance within the relevant study.
[c]Studies coded as "mixed method" were also coded as correlational, quasi, or experimental, depending on the nature of the quantitative research included.
[d]The total number of performance outcomes (n = 224) is greater than the number of empirical papers reviewed (200) and total studies (221), as three studies include two performance outcomes.
[e]The team type categorization is based on the typology of teams presented in Sundstrom, McIntyre, Halfhill, and Richards (2000).

Indeed, the IPO–IMOI model serves as such a strong theoretical underpinning for the temporal ordering of variables that researchers have frequently relied on correlational research to provide support for hypotheses about the antecedents of performance. Seventy-eight percent of the included studies (173 studies, as noted in Table 1) were correlational in nature; only 22% of studies explored causality (43 studies were experimental, five were quasi-experimental). This is also illustrated by published meta-analyses included in our review that consider team performance; these also exhibit the emphasis on antecedents, mediators, and moderators that lead to team performance, rather than unpacking anything specifically about team performance itself (see the appendix for sample references).

A strength of the IPO–IMOI research stream is multisource data collection, with a focus on team performance from external sources. Researchers have collected performance data from a rater who is external to the team in 49% of the studies we reviewed; 37%, 8%, and 4% of the total studies included in the review featured manager ratings, other external ratings, and client/customer ratings, respectively (Table 1). Objective performance data (sales numbers, for example) have been included as the criterion performance variable in 42% of the reviewed studies. However, there is little research that has explored team performance with different measures simultaneously. Less than 2% of the included studies combined team performance measures from different sources (not including self-ratings of perceived performance) within the same study. This is notable, given Mathieu et al.'s (2008) point that the conceptualization (and subsequent measurement) of team performance may, indeed, matter. Similarly, meta-analyses have generally not focused on this issue. Only Castaño, Watts, and Tekleab (2013) unpacked the possible ways in which performance measurement (among other factors) might have affected the results of the cohesion literature. Although they found that measurement differences (outcome vs. behavioral, subjective vs. objective) did not affect the relationships between different types of cohesion (task and social) and team performance, there may be other crucial differences. For example, are some measurement forms more sensitive to team dynamics across different time frames?

Theme 2: A Small, but Growing, Set of Studies With Novel Approaches to Temporal Issues

As noted above, Mathieu et al. (2008) called for a more deliberate approach in terms of considering temporal dynamics with respect to team performance. Although a majority (167, 76%) of the included studies used a lagged design

(i.e., predictors and mediators collected prior to performance data), far fewer studies considered any temporal dimensions with respect to the measurement of performance itself. As noted above, we found that only 11% (26 studies) of the included studies measured team performance at multiple points in time. We divided these into two groupings to better understand the state of the included literature: (a) novel approaches with finer grained consideration of cause-and-effect relating to team performance (21 studies) and (b) growth modeling approaches that examine how patterns in team performance develop over time (five studies). These are summarized in the appendix and described below.

Novel approaches with finer grained consideration of cause and effect. As noted above, only 21 studies during the last decade included in this review have adopted more novel approaches in their data collection and analytic strategies to help unpack cause and effect in temporal dynamics with respect to team performance. As one example, Gardner (2012) conducted a multimethod field study of 78 audit and consulting teams, including both survey results and longitudinal qualitative case studies of six project teams (with life spans of 3-10 weeks). She examined the conditions under which pressure leads to (or detracts from) team performance, finding that four limiting team processes are prevalent when pressure is high, and these detract from performance. Although team performance was still considered at a single point in time at the end of the teams' task (and lining up with the ability of clients to provide ratings for team performance), this study deliberately sought to understand the temporal cause and effect of team member communication at a fine-grained level. As another example, Murtha (2013) also sought to examine temporal cause and effect in an exploration of "peaking at the right time"—the idea that timing high levels of performance for teams is itself an aspect of performance. A third example is Knight (2013), who studied how shared team mood shapes the exploratory search process in military teams, finding that mood drives search processes differently before the midpoint, at the midpoint, and in the second half of team life spans as a deadline approaches; the trajectory of search processes, in turn, drives team performance at the end of the task.

Unusual and intriguing approaches occurred in at least four other studies that sought to shed light on the question "what should teams be doing when?" to positively affect performance over time (e.g., Cheng, Chua, Morris, & Lee, 2012; Lei, Waller, Hagen, & Kaplan, 2016; Pearsall, Ellis, & Bell, 2010; Villado & Arthur, 2013). Villado and Arthur (2013), for example, explored after-action reviews in work teams. The authors examined the impact of training participants in distinct types of after-action review to compare how

four-person teams interacting on a computer-based battlefield simulation game perform with and without the training. The study unfolded over five hours and included six sessions (during which teams received feedback on their performance). Villado and Arthur (2013) plotted out the mean team performance scores over time by training condition to demonstrate the point at which the training conditions began to differ on performance. Teams in different training conditions, on average, had different performance trajectories over time—those that underwent the training experienced performance improvement, whereas those that did not undergo training had some stagnation in team performance.

As another example of an unusual fine-grained approach, Lei et al. (2016) examined how "teams working in dynamic settings successfully transition across routine and non-routine situations," using data from 11 two-person flight crews engaged in flight simulation sessions (p. 491). The authors used expert evaluations of crew adaptive performance as the focal dependent variable. This study stands out due to its emphasis on an episodic, event-oriented approach targeted at changes within the team over time and across levels; they sought to understand the relationship between team interaction patterns at a more microlevel in dynamic settings and team adaptive performance. It is notable that Lei et al. (2016) used theory (i.e., Marks et al., 2001) to consider what kinds of team interactions might "match" with the situation (conceptualized in an unfolding way over time) to affect performance over three phases of the flight ("en route," "descending," and "landing").

Growth modeling approaches. In the last decade, the team performance literature we reviewed has also included five studies (2% of the included studies) that use growth modeling methodologies. These approaches are notable, in that, they begin to consider patterns in team performance as it unfolds over time in a dynamic manner, acknowledging that performance is not a static concept. Mathieu and Rapp (2009), for example, discussed the importance of "foundational activities" for teams (i.e., taking the time to lay down a solid foundation, cf. Ericksen & Dyer, 2004), and then considered how teams might manage taskwork and teamwork over time (Ilgen, 1999; Marks et al., 2001; McIntyre & Salas, 1995) as an outgrowth of that foundation. They emphasized the use and importance of longitudinal criterion measures of performance to enable analyses of dynamic effects. The growth modeling approach that Mathieu and Rapp (2009) used allows for a very precise consideration of what happens to team performance across a series of performance episodes, and so, the criterion variable received a much more complete, holistic consideration.

Mathieu, Kukenberger, D'Innocenzo, and Reilly (2015) examined the relationship between team cohesion and performance in two growth modeling studies based off samples of teams of undergraduate and graduate students engaged in a 10-week-long management computer simulation. They considered the reciprocal influence of these two variables, finding that the strength of the cohesion–performance relationship is stronger than that of the performance–cohesion relationship; moreover, the strength of the cohesion–performance relationship increases over time, whereas the strength of the performance–cohesion relationship remains relatively stable. Both concepts evidenced time-related mean changes; for team performance, this meant that "[a]verage team performance declined initially until around midway through the simulation, at which time, team mean performance levels rose until the end" (Mathieu et al., 2015, p. 728). The authors noted that this is a performance pattern over time that is to be expected, given the nature of the simulation task—the sample of teams experienced investment–performance cycles, much like entrepreneurial start-ups. The consideration of the patterns in team performance, a deep understanding of the team task, and the use of theory from Kozlowski et al. (1999) and Marks et al. (2001) allowed Mathieu et al. (2015) to make nuanced observations about the reciprocal relationship between cohesion and performance and further unpack the underlying processes behind how and why cohesion and performance are related.

Another example of the use of growth modeling to examine team performance is Dierdorff, Bell, and Beelohlav (2011), who combined the IMOI theoretical approach with a consideration of the patterns in team performance over time. The authors examined collectivism and how it related to initial team performance. Given that teams are, at the start of their life spans, collections of individuals, this strategy makes theoretical sense. They also theorized about which facets might lead to change in team performance, in addition to examining the influence of team member exchange (an emergent state that likely reflects patterns of processes, behaviors, and interactions on the team) on performance, given the team's composition in terms of collectivism. Dierdorff et al. (2011) used a multilevel growth modeling analytic strategy to tease out exactly when these variables influence team performance and patterns in team performance change as they examined 66 student teams completing a business simulation over a 5-week period. In addition, they used Kozlowski et al.'s (1999) theory of team compilation and performance as a "conceptual backdrop for the temporal hypotheses," which provided the rationale for why they considered the average level of team member collectivism as a team input (p. 257). Like Mathieu and Rapp (2009) and Mathieu et al. (2015), this study's strong connection to theory allows for a nuanced examination of factors influencing team performance over time. This included

the classic IMOI approach and the Kozlowski et al.'s (1999) developmental approach to teams over time.

Lorinkova, Pearsall, and Sims (2013) also used growth modeling to explore the teams in their sample. In particular, they focused on how team leadership styles might have differential effects on team processes and performance over time. Teams made up of undergraduate students participated in a 3-hr-long computer simulation task that focused on leadership development; team leaders were both selected (using a leadership assessment tool) and trained to exhibit a certain leadership style as part of the style manipulation within the experimental design. Like Mathieu et al. (2015), Lorinkova et al. intended to unpack the relationship between two variables—empowering leadership and team performance—by considering patterns in team performance over time, and how these patterns might be influenced by the type of leadership to which team members were exposed. The growth modeling analysis revealed that "although teams with directive leaders started performing well more quickly, their performance plateaued, whereas the emergent cognitions and improved learning and coordination capabilities of empowered teams allowed them to improve over time" (Lorinkova et al., 2013, p. 589). The use of growth modeling to consider patterns of change in team performance, along with Kozlowski et al.'s (1999) theoretical framework of team development, enabled these authors to reexamine an enduring question in the leadership and teams literatures with a more thorough, fresh approach.

Conclusions From the Last Decade of Team Performance Research: Looking Ahead

Evident from this review, issues relating to time—and timing—are still surprisingly scarce in scholarship on team performance (see Cronin et al., 2011, for more on this topic). Consistent with the conclusions of Mathieu et al.'s (2008) review, team performance research in the last decade has continued to draw heavily on the IMO/IMOI models, with team performance itself being mostly considered in a relatively static way. Although 76% of the research has investigated lagged relationships, only 11% includes multiwave designs with respect to team performance. Only in 2% of the included studies have scholars examined team performance as a variable that changes and develops over time, investigating the patterns of team performance with growth modeling methodology.

One of the complexities associated with incorporating time as a concept in organizational research is that there has been a "lack of coherence in the field" (Ancona, Okhuysen, & Perlow, 2001), and this is also true within the

teams literature. In addition to classics such as Tuckman and Jensen (1977) and Gersick (1988), a few more recent key theoretical frameworks within the team literature are helping to sort out some of the confusion about unpacking the timing of team dynamics (e.g., Kozlowski et al., 1999; Marks et al., 2001; McGrath, 1991). Marks et al. (2001) focused on the temporal commonalities that all work teams experience, emphasizing,

> No work-related tasks are performed in a vacuum, unaffected by deadlines, time limits, or schedules. Work teams strive toward collective goals that incorporate time as a component (Locke & Latham, 1990). Time factors such as project deadlines, synchronization of schedules, alignment of coordination efforts, and so forth dictate many aspects of team functioning, including the strategies that are employed, the pace of activities, and role assignments that develop in order for the teams to perform successfully. (pp. 358-359)

Marks et al. (2001) call attention to the concept of team performance trajectories, noting that they "most commonly consist of several I-P-O cycles that run sequentially and simultaneously" (p. 359). Performance trajectories are rooted in temporal cycles of goal-directed activity, called episodes—"distinguishable periods of time over which performance accrues and feedback is available (Mathieu & Button, 1992, p. 359)." Yet, as our review above explained, only five studies (2%) have examined how performance is embedded in multiple episodes over time. Each of these studies starts to unpack facilitating conditions for patterns of change in team performance rather than a specific level of performance at one point in time.

In considering the body of research from the last decade, promising seeds are emerging for the dynamic examination of team performance with growth modeling; it is an opportune occasion to develop a conceptual framework about how team performance changes over time. Overall, we seek to move the literature away from a focus on "snapshot" levels of team performance, and toward the consideration and appreciation of the study of patterns of change in work team performance (i.e., team performance trajectories). In the next sections, we advance conceptual, theoretical, and practical ideas regarding the consideration of patterns in team performance over time, and we discuss the future research implications associated with these patterns.

Team Performance Archetypes

How a given team has performed over time (Cyert & March, 1963; Greve, 2003)—and how it is performing in the present moment (Carp, 2003; Lehman & Hahn, 2013)—are inextricably linked. The English language has a host of

idioms to describe this concept of performance momentum: Teams may be "on a roll," "unstoppable," "perennially high performing," "unbeatable," and "riding a wave"; they can "stay the course," experience a "losing streak" or a "cold streak," and can "break" the streak. Interestingly, labels for teams typically categorize them into "groups that work (and those that don't)" (Hackman, 1990, p. vi), a dichotomous divide that may become a self-fulfilling prophecy for teams. Such stigmas may not be practically or theoretically helpful, and perhaps has led to our literature's myopic focus on "high-performing" teams. Because research to date focuses on what predicts high team performance at a single point in time, it implies that teams are either high performing or low performing, with this dichotomy being fairly static.

To move beyond this, we suggest a focus on patterns of performance across multiple episodes. Our framework, therefore, applies to teams that have multiple, distinct performance cycles over time and that receive feedback on these episodes in real time. Although the length of an episode might differ in different contexts, we expect the patterns that we describe below as archetypes to unfold regardless. For example, in some teams (i.e., a consulting team), projects that are months in duration might delineate episodes, and, hence, examining performance across episodes might capture their performance over several years. For other teams (i.e., an emergency response team), an event that is only hours in duration might constitute an episode, and so examining performance across episodes might capture performance in the space of a week. The important delineating factor for what constitutes the episode is the completion of goal-directed activity with receipt of feedback in some form about that activity (Marks et al., 2001), and so, we believe it essential to remain open to these episodes being of different lengths in different contexts. Importantly, we argue that the archetypes are useful in conceptualizing the patterns irrespective of the length of time they cover in these different contexts, and the point in the team's life span that we might engage with the team. Simply put, the archetypes serve to conceptualize the patterns of change in team performance over time, as teams work across multiple tasks and multiple context-specific performance episodes.

The Archetypes

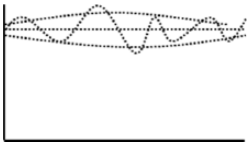
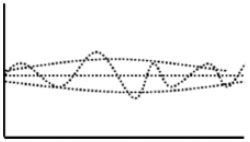
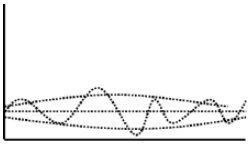
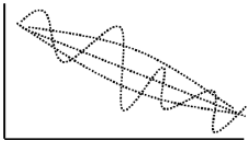
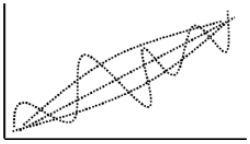
To assist in the conceptualization of patterns of team performance over time, we use metaphors from the mythology of the ancient Greek and Roman world to introduce and describe team performance archetypes. The use of metaphors in theory construction has been long advocated by organizational scientists (cf. Weick, 1989), because they are helpful in expressing complex and abstract organizational phenomena (Cornelissen, 2006). Existing metaphors

in the teams' literature are insufficiently intricate to capture trajectories that team performance may take over time (Collins et al., 2016). The mythology of the ancient world provides an accessible, relevant, and appropriately complex set of stories to be used as an illustrative tool that sheds light on these possible patterns. We introduce the five team performance archetypes, explore features of each performance pattern, and describe connections to current teams' research. Table 2 summarizes these metaphors and archetypes, which we now describe.

Team Jupiter: High-performing teams. The "Jupiter" archetype includes what have been classically referred to as "high-performing teams" (Katzenbach & Smith, 1993) and "groups that work" (Hackman, 1990, p. vi), although our focus on patterns of performance means that we emphasize the idea that high performance is sustained over time. These teams can be described as "on a roll," "unstoppable," "perennially high performing," and "unbeatable." In these teams, initial high performance and goal achievement are maintained, with no major fluctuations in positive or negative momentum thereafter. In Roman mythology, Jupiter is the all-powerful king of the gods and serves as the god of the sky and thunder. Despite minor fluctuations (see Table 2 for visual examples), ultimately Jupiter teams are high performing: starting and continuing as highly effective teams, meeting or exceeding lofty goals, and exhibiting high reliability within and across performance episodes (e.g., flight crews; Hackman, 1993; Salas, Burke, Bowers, & Wilson, 2001). As one empirical example, we observed the Jupiter archetype in Mathieu and Rapp's (2009) work. In this study, teams that developed high-quality team charters and performance strategies at team formation exhibited a high level of performance at the start of a business simulation, and over time, the trend in their trajectories was slightly positive, indicating that these teams started strong and continued to exhibit high levels of performance over time.

Team Neptune: Midrange teams, with relatively steady, average performance. "Neptune" teams "stay the course," delivering the necessities. These teams start and continue with moderate performance; their output is relatively stable with no major fluctuations in positive or negative momentum. According to the Romans, Neptune is the god of freshwater and of the sea. He plays an important but somewhat background role in the pantheon; classicists note that only one temple in Rome was dedicated to him. Neptune teams' midrange performance is evident from the start, and this has little positive or negative momentum thereafter; these teams are known for consistently delivering sufficient performance. Performance goals are achieved, but they may not be especially lofty or impactful. These teams are proficient, albeit not

Table 2. Team Performance Archetypes.

Archetype name	Illustrative graph	Description of team performance trajectory
1. Jupiter		High level of initial performance intercept. Change over time could be linear, quadratic, cubic, or otherwise nonlinear—team maintains high performance level across life span.
2. Neptune		Midrange initial performance. Change over time could be linear, quadratic, cubic, or otherwise nonlinear—team maintains average performance level across life span.
3. Pluto		Low level of initial performance intercept. Change over time could be linear, quadratic, cubic, or otherwise nonlinear—team maintains low performance level across life span.
4. Icarus		High level of initial performance intercept. Downward spiral of change over time could be linear, quadratic, cubic, or otherwise nonlinear—team is at low performance level by end of team life span.
5. Odysseus		Low to midrange initial performance intercept. Upward spiral of change over time could be linear, quadratic, cubic, or otherwise nonlinear—team attains high level of performance at end of life span.

Note. In the above graphs, the x axis is time and the y axis is team performance.

necessary innovative or proactive in their performance. Again, there may be minor fluctuations, but there is an overall relatively flat team performance trajectory. Ultimately, Neptune teams meet goals, get the job done, and are, thus, vital for organizations to achieve their goals (e.g., Locke & Latham, 1990). Mathieu and Rapp's (2009) work includes an empirical example of

Neptune teams: Teams that developed low-quality charters, but used high-quality performance strategies, were able to sustain an average level of performance over time relative to other teams in the context of their study.

Team Pluto: Low-performing teams. "Pluto" teams do not meet performance expectations—they are low-performing teams on a "losing streak" or "cold streak." These teams start and continue with low performance; their output never achieves any positive momentum from their initial inferior performance. The dark, brooding, and sometimes violent Roman god Pluto presides over the underworld with his three-headed guard dog, Cerberus, and abducted bride, Persephone. The metaphor suggests that Pluto teams are trapped in a low-performing state, whereby their slow start on team performance never truly shows any momentum that enables improvement. These teams generally do not meet performance goals and may miss deadlines and budgeting goals, perhaps because of extreme process loss (and/or coordination failures; e.g., Staats, Milkman, & Fox, 2012). Like Neptune and Jupiter, the Pluto team trajectory could have minor fluctuations, but any short bursts of positive momentum are overtaken by countervailing negative momentum. This ineffective ebb and flow in performance reflects the struggles Pluto has in the gloom of the underworld. Empirical examples of Pluto teams may be more difficult to find in the organizational literature, because the focus tends to be on successful teams. In the Mathieu and Rapp (2009) paper, the team performance trajectory of low-quality charters and low-quality performance strategies may be a Pluto archetype. However, we suspect that teams susceptible to the Pluto archetype are more likely to emerge when working in weak situations (e.g., lack an overarching organizational strategy, structure, or tight team task cycles), given that context provides fewer of the necessary conditions needed for team success (e.g., compelling direction, enabling structure, supportive context; Hackman, 2012). Illustrations of these teams could be communities of professionals who work across organizations on short-term projects, such as the documentary film teams consisting of independent contractors in Gibson and Dibble (2013).

Team Icarus: Initially high-performing teams, with a downward spiral. The "Icarus" archetype is emblematic of teams that start off with impressive performance but then suffer a "losing streak." That is, the team's initially high-performance levels are followed by a "downward spiral" of negative momentum in team performance. In Greek mythology, Icarus' father is Daedalus, a talented inventor who builds two flying contraptions. He warns his son not to fly too high, as it would be too close to the sun; initially, Icarus is in perfect control of his wings. As he becomes overconfident and approaches

the sun, however, the wax that holds his feathers begins to melt, and he falls to his death in the sea below. The metaphor of Icarus teams suggests that they are initially high-performing teams that *seem* to have their tasks and processes under control. Early levels of team efficacy (Bandura, 1997) may be unrealistically high, however. These teams quickly fall apart and may succumb to a deviation-amplifying downward spiral of negative momentum (e.g., Lindsley, Brass, & Thomas, 1995), resulting ultimately in a low level of continuing performance. Once again, Mathieu and Rapp (2009) provide an empirical example of this archetype; teams that developed high-quality charters and low-quality performance strategies started off with typical team performance, but quickly spiraled into declining performance. The overall performance trend for these teams over time was declining, without any bursts of positive momentum—indicative of the Icarus archetype.

Team Odysseus: Initially low- to midrange-performing teams with an upward spiral. "Odysseus" teams "ride the wave" and "break the streak." These teams begin with low levels of initial performance, but then seem to surge miraculously ahead, gathering positive momentum and attaining increasingly higher levels of team performance over time. The trials and tribulations of Odysseus, the hero of Homer's epic *The Odyssey*, are legendary. After fighting in the Trojan War, Odysseus tries to return home. He is met with rough seas and dangerous detours. After 10 long years of overcoming challenge after challenge, Odysseus finally makes it home to Ithaca again to be reunited with his wife and son. In keeping with the legend, Odysseus teams are initially swamped with challenges. With each small victory and goal attainment, however, these teams gain positive momentum and increase their levels of performance (e.g., Amabile & Kramer, 2011; Chen & Kanfer, 2006; Locke & Latham, 1990), perhaps with deviation-amplifying positive spirals (e.g., Lindsley et al., 1995). Ultimately, these teams end with an elevated level of performance (i.e., Odysseus' ultimate goal was to return home and reunite with his wife and son). In terms of their performance pattern, these teams begin with a low level of performance, and may have minor fluctuations in performance thereafter, but ultimately their positive performance trajectory carries through to the conclusion of the team's life span. Empirical evidence of the Odysseus archetype exists in Lorinkova et al.'s (2013) work. In considering how teams with different leadership styles performed over time, they found that both directive and empowering team leaders result in a positive performance trend over time for teams. Notably, the teams with empowering leaders took more time than the teams with directive leaders to achieve positive trajectories of team performance, but when they did, the positive change in performance over time was more pronounced (i.e., steeper positive slope in performance trajectory).

Although it is premature for us to draw any conclusions about exactly when and where (and why) teams may exhibit these performance archetypes, it is worth noting that we do not expect all studies examining team performance over time to include empirical examples of all five trajectories. In fact, the presence or absence of different trajectories may serve as a clue regarding what concepts might be most relevant to consider as leverage points for improving team performance over time. As an example, in the study by Lorinkova et al. (2013), leaders were specifically trained to exhibit directive and empowering styles. As noted above, teams exposed to both types of leadership could be considered examples of the Odysseus archetype. It may be that strong leadership (whether it be directive or empowering) is a key driver of this archetype.[2] Clearly, we are in need of much more conceptual and theoretical development to explain the emergence of the archetypes and unpack the numerous antecedents; the few exemplars from existing teams literature suggest this will be a fruitful avenue for future research.

On the Use of the Archetypes, in Conjunction With Growth Modeling

The fundamental purpose of the archetypes is to help researchers conceptualize patterns of change in work team performance over time. As such, the archetypes can be used to think about latent trajectories of work team performance (i.e., the description of the average shape of scores in team performance over time for the population of teams under investigation). As Collins et al. (2016) note,

> One or more latent trajectories may be theorized to exist within a population. In the scenario where multiple latent trajectories are theorized, there are subpopulations that change in different ways . . . Predictors can be used to investigate why a team emerges within one class rather than another. (p. 71)

Growth modeling techniques can be used to test for these latent trajectories and tease out why and how they exist, given the theoretical frame of interest. A basic understanding of the procedural logic of growth modeling, therefore, complements the use of the archetypes and greatly helps in terms of developing testable theory. In the next few paragraphs, we provide an introduction to this logic as it relates to the archetypes; we encourage interested readers to reference some of the recent outstanding extant management/organizational behavior articles that delve more deeply into this topic (cf. Bliese & Ployhart, 2002; Collins et al., 2016; Ployhart & Hakel, 1998). In particular, as noted above, the Collins et al.'s (2016) piece is explicit in terms of how growth

modeling can help researchers unpack the temporal dynamics of work groups/teams; others have also started to explore the implications of growth modeling for teams research (Kozlowski, 2015; Shuffler et al., 2018).

Growth modeling is an exceptionally powerful way to consider patterns of change in any given variable across time, while accounting for issues inherent in longitudinal data (e.g., nonindependence; Bliese & Ployhart, 2002). Given the theoretical framework or research questions of interest, researchers might choose to collect data on possible independent variables that might influence how the team performs at the beginning of the measurement period—which may or may not coincide with the start of the team's life span, as we noted above. Researchers might also consider, based on theory, possible factors that might account for any change in performance over time, and collect data on these mediators and moderators. As they approach these questions, the archetypes can provide a conceptual map to help researchers consider what they expect initial performance levels to look like; whether they expect performance to change or not over time; and if so, what that change might look like a priori.

When collecting data on team performance over time, the team performance variable is nested within each team—so it is nonindependent over time, and needs to be accounted for as such. Collecting data at three or more points in time is essential (Chan, 1998); patterns of team performance can only be detected when there are multiple points in time, and the patterns that can be detected are limited by the number of data points that a researcher collects. For example, if only three data points are collected, researchers can only test for the presence of linear and quadratic trends; cubic trends (or other more complicated nonlinear trends) cannot be identified without more data points. Kozlowski, Chao, Grand, Braun, and Kuljanin (2013) discuss using growth modeling to study emergent team processes and states over time, and they note that emergence takes time to unfold. Depending on the theoretical questions being examined, 30 or more repeated measurements over time could be helpful. Although thus far, team performance has not been theoretically considered as an emergent state, it potentially could be studied as such in the future. In other words, at what point does a level of performance emerge from the team, perhaps such that the team's expectations change associated with that particular level of performance—how do teams "raise the bar"? Furthermore, how might teams fitting different performance archetypes experience the emergence of performance differently?

It is clear that the decision regarding the number of repeated measurements of team performance, and the interval between them, should be based on theory (and/or the research questions in consideration). So, for example, is there an intervention of theoretical interest to the researchers, and would it be advantageous to develop growth models reflecting team performance

patterns before and after the intervention? If so, the researchers might think about ways in which to collect performance data 3 to 4 times before the intervention, and then again 3 to 4 times after. It is worth noting that all five of the studies in our review that used growth modeling used performance scores from rounds of different computer simulations. There was no additional burden on the team or other stakeholders with respect to data collection; supervisors, managers, external observers, and clients were not asked to provide performance data over multiple survey periods. The need for more data points will limit, in practice, what kinds of team performance data may be available for consideration. Simulation, archival, or other unobtrusively available team performance data will be helpful here. Depending on the theoretical questions in play, and the timing of the collection of performance data, the research team would potentially be able to ascertain whether teams simply change performance momentum—or actually change overall archetypes—as each team performance episode is completed.

Once the data have been collected (no easy feat; e.g., Luciano et al., 2018), the statistical steps of growth modeling can begin. As noted above, researchers may have a sense of what the latent trajectories of the teams in the sample/subsamples of interest are a priori. With this in mind, one first fits temporal patterns to the performance data.[3] Using a model-testing approach (see Bliese & Ployhart, 2002), it is possible to determine whether team performance (a Level 1, within-team variable) progresses over time for a given sample (or subsample) of teams in a linear, quadratic, cubic, or other, more complicated nonlinear manner. The next steps involve introducing higher level, between-team predictors to the model that may predict initial levels of performance and/or variables that may serve to predict the rate of change in performance over time. The importance of theory here is critical; we cannot overemphasize how much potential this technique has to unlock critical questions about team performance over time and to make new theoretical leaps (see Collins et al., 2016, for a detailed discussion of the importance of theory in growth modeling when studying team dynamics). Our work here complements this existing work; we provide teams' researchers with a concrete conceptual model for a variety of abstract patterns of change in team performance that could be tested using growth modeling methodologies.

Discussion

Theoretical Implications and Future Research Avenues

The team archetypes conceptual framework aims, in part, to inspire team researchers to utilize growth modeling to investigate team performance dynamically. A challenge from our theory-driven hypothetico-deductive

research tradition is that it does not yet provide us with sufficient tools to unpack patterns of team performance over time (Cronin et al., 2011; Kozlowski, 2015). It is notable that qualitative, contextual information was critical in early studies of team development (e.g., Gersick, 1988; Tuckman & Jensen, 1977). Ideally, in future teams' research, the precision of growth modeling will be complemented with more qualitative research methodologies for developing a deep understanding of context (Gibson, 2017). Researchers might also consider an abductive approach, which seeks to solve real-world challenges and simultaneously advance theory (Mathieu, 2016); it promotes "the accumulation of knowledge through grafting together and repurposing insights from different theories and contextualizing them to lend insights for any particular application" (p. 1138). With these options in mind, we suggest three more specific future research directions: (a) verifying the archetypes, (b) exploring facilitating conditions for the archetypes, and (c) considering shifting archetypes.

Verifying the archetypes. An important initial research question is to explore whether there are indeed categories of team performance trajectories—that is, the team archetypes we propose. Are five archetypes sufficiently encompassing, yet also parsimonious enough, to capture team performance trajectories in many organizations? The rise of methods of coping with big data will be beneficial in this endeavor, and growth mixture modeling (see Collins et al., 2016) can identify whether the five team archetypes emerge. This future research avenue will also need to consider how context, such as industry type, enables or restrains the emergence of team archetypes. For example, perhaps in the military, emergency services, and high-reliability organizations, the more constrained context may result in fewer archetypes. In statistical terms, growth mixture modeling team performance trajectories in these contexts may only reveal two archetypes—Jupiter and Icarus—given that only high-performing teams are released from training, and if team performance starts to significantly drop, these teams go back into training. In contrast, for contexts with more autonomy (e.g., business consulting), growth mixture modeling may reveal all five proposed team archetypes. Mathieu and Rapp (2009) provide an illustration with student teams in which all our team archetypes emerged except Odysseus; as noted above, Lorinkova et al. (2013) provide evidence of the Odysseus archetype.

A critical component of unpacking the existence of the proposed five archetypes is the contextual features that enable or restrain their emergence. Is it the rhythm of performance deadlines and feedback from industry that influences the emergence of archetypes, or are the archetypes more inherent in the team/task type? That is, taking a systems approach to understanding team performance dynamics (Cronin et al., 2011), which system—the

industry, organization, and/or task cycle—is the more powerful driver of the team archetype? These research questions require context to be substantively incorporated into future teams' research, rather than the current trend of including these issues as control variables (Cronin et al., 2011).

Similarly, different types of performance outcomes need to be substantively incorporated into the research agenda. The sensitivity of the team performance outcomes utilized in the research may also determine whether a variety of team archetypes emerge. For example, in the high-reliability teams identified above, investigation of the archetypes with objective performance measures (e.g., near miss rates for air-traffic control teams or emergency department medics) may show insignificant variation in team performance. Whereas, manager or team member ratings may be more sensitive when there are safety and legal implications of team performance.

Clearly, future field research would be helpful in verifying the existence and frequency of the five archetypes. Whether these team archetypes exist is essentially a descriptive research question, with the focus on systematically mapping patterns of team performance from big data sources to develop benchmarks to guide research design about the occurrence of team archetypes for theoretical contingencies for contextual features such as team types, tasks, and deadlines (Kozlowski, 2015). Knowing the archetypes would enable team researchers to better consider path dependency in a key dependent variable in our field, team performance. As Cronin and colleagues (2011) highlighted, "[F]ailing to account for path dependence can mis-specify the strength of found effects" (p. 596), because boundary conditions and illusory contradictions across research are not considered.

Facilitating conditions for archetypes. A second arena ripe for future research is building a greater understanding of what promotes specific archetypes. Some prior research has focused on the enabling conditions at the onset of a team's existence, such as team composition, team charters, or team training/coaching (cf. Hackman, 2012). However, given our approach does not assume engagement with the team at the point of formation, and we are interested in patterns that constitute archetypes, which may be identifiable across performance episodes at any point in the team's life, we recommend, instead, a focus on how a team's performance changes over time and how positive momentum is created or sustained.

For example, recall that Odysseus teams are characterized by overcoming ongoing struggles to achieve positive momentum and ultimately high performance. What may differentiate Odysseus teams from other teams is how they take advantage of the continual and varied opportunities to learn and act on feedback, with this being an iterative process across multiple performance

episodes. These principles are the premise of "agile teams" in software development and consulting, which are structured to work through relatively short iterations of multiple performance deliverables (Dybå & Dingsøyr, 2008). These teams create momentum from the team task cycles. This involves setting project goals and plans, and then during and after completing tasks, obtaining feedback from multiple end users as well as conducting frequent short meetings for debriefs and handoffs. The continuous feedback cycle consistently reevaluates whether team outputs are "performing," thus enabling iterative learning to improve performance (Edmondson, Dillon, & Roloff, 2008; Marks et al., 2001). The short task cycles provide just enough control—in the form of goals, deadlines, and systematic feedback—that guides Odysseus teams in the completion of team tasks. Task requirements are clear and create a way forward, stimulating momentum. As teams learn from the feedback obtained, this is likely to enhance team performance across episodes. Effective team leadership that facilitates team learning may also influence Odysseus teams (e.g., Lorinkova et al., 2013); the literature on the benefits of after-action reviews in teams also touches on this issue (e.g., DeRue, Nahrgang, Hollenbeck, & Workman, 2012; Eddy, Tannenbaum, & Mathieu, 2013; Ellis & Davidi, 2005).

Interestingly, many theories of team development coincide with this Odysseus pattern of increasing positive momentum, arguing that most teams progress linearly through a series of phases or stages, such as the emergence and resolution of conflict, with the goal to become high-performing teams (Arrow, 1997). However, we know that conflict frequently derails teams (see De, Dreu, & Weingart, 2003), and only a minority of teams overcome this conflict in a way that enables them to flourish with a positive team performance trajectory (Behfar, Peterson, Mannix, & Trochim, 2008; Thiel, Harvey, Courtright, & Bradley, 2017). In particular, three strategies seem to differentiate those teams that resolve conflict: (a) To address interpersonal difficulties, focus on the content of interpersonal interactions rather than delivery style; (b) to counteract conflict around assignment of work, discuss reasons behind it; and (c) to determine roles, use relevant task expertise rather than volunteering, default, or convenience (Behfar et al., 2008). We suspect that these processes are characteristic of the Odysseus archetype, and encourage future research to examine performance trajectories where these are in place to verify this is the case.

A second illustration of exploring ways of maintaining positive momentum in team performance pertains to regulatory mechanisms. For example, is learning the most crucial team regulatory mechanism? Perhaps, it is for the two most successful team archetypes, Jupiter and Odysseus, because they have ways to manage adverse performance feedback. However, for teams

with long-term performance slumps such as Icarus, perhaps emotional regulation is most important, so that these teams are open to incoming feedback about what improves team performance. In addition, understanding how to foster team resilience (being able to bounce back from challenges; Alliger, Cerasoli, Tannenbaum, & Vessey, 2015) might be a fruitful avenue for identifying antecedents of positive team trajectories over time. Although most of the research on team resilience has unfortunately relied on cross-sectional designs, an array of antecedents of team resilience have been identified, such as the team having a supportive climate (Meneghel, Martínez, & Salanova, 2016). Similarly, a wide range of team emergent states and processes have been advocated as important mechanisms for overcoming difficulties as teams strive to be high performing (e.g., team learning, affect, efficacy, goal setting, cohesion). We have yet to understand which are most important for fostering long-term team performance across multiple episodes.

Shifting archetypes. Knowing more about how to create meta-change that shifts teams from one team archetype to another is also of vital importance. For example, what enables a shift from a low-performing archetype (i.e., Icarus or Pluto) to a high-performing archetype (i.e., Jupiter or Odysseus)? This is a question of "turning around teams with stagnating or poor performance" (Collins & Gibson, 2014). Ultimately, this shift in archetypes conceptually describes a change in the rate and/or direction of momentum of team performance.

There are likely multilevel issues at play in terms of how teams move from one archetype to another. For example, team performance feedback has an impact on the effort and motivation individual team members expend in the next team performance cycle. So, prior to turning around team performance, it may be important to understand and address the emotional toll that the low-performing archetype likely has on individual team members. The double-edged sword of performance pressure (Gardner, 2012) or individual team members' satisfaction with the team, may be the trigger of static or negative momentum. These reactions will affect the effort team members put forward in the next performance cycle, and, thus, the future team performance trajectory. For example, Jupiter teams may have grand expectations that induce stress, derailing team performance; Neptune teams may have burnout from constantly seeking to overcome challenges; and the low performance of Pluto teams may become a self-fulfilling spiral. Perhaps, it is only once such individual issues have been addressed that the team can effectively approach shortcomings in their task accomplishment. More generally, it is important to recognize that teams need time out from their tasks to attend to team viability issues, which may create momentary downturns in team performance

patterns. Ultimately, however, these activities will likely enable the teams to become more viable in the longer term (McGrath, 1991).

Empirical evidence suggests that interventions such as team building can positively affect team member satisfaction, even when satisfaction is low as a result of ongoing poor team performance (cf. Klein et al., 2009). Perhaps, it is only after individual team member needs are recognized that performance on team tasks can be improved. For example, if the team's shortcomings are a result of a lack of individual skill development, team training interventions could help, or if the team's challenge is problem solving, an intervention on conflict management could help (Behfar et al., 2008).

Another option is for the team to look outward, and consider reimagining its boundaries. Recent research calls for attention to the permeability of team boundaries, suggesting that when members move easily in and out of the team, then external activity is enhanced, providing access to resources and increasing the team's options for moving forward (Dibble & Gibson, 2018). This increase in externally focused activity may be critical for both identifying and taking advantage of opportunities to turn the team around (Collins & Gibson, 2014). Thus, like Shuffler et al. (2018), we call for future research to explore combining team interventions. Albeit, we highlight here that a necessary first step is to understand the archetypal performance trajectory to identify when and how teams became derailed, so that the conditions instigating the negative or static momentum can be addressed to pull the teams out of their performance slump and turn the team around. In sum, we suspect that different interventions will be needed along the way, depending on the archetype; therefore, understanding which trajectory characterizes the team (i.e., which archetype best describes it) will help to focus relevant interventions on the specific issues that are most troublesome.

Practical Implications

Perhaps, the most important implication of the conceptual approach presented here for practitioners is that knowledge of team performance at any one point in time does not provide a holistic picture of where teams have been or where they are going. Rather, it is important to shift our thinking from predicting "levels of performance" to "patterns of performance." The approach to the examination of team performance over time that we advocate is fine grained enough such that future researchers will be able to hypothesize and test very specific recommendations for interventions based on empirical evidence. With knowledge of the likely team archetype, a more appropriate intervention is likely to be chosen. For example, a Pluto team will need assistance to overcome challenges; perhaps, these teams initially need an

intervention that acknowledges emotional reactions to poor performance such as coaching and/or team building (Shuffler et al., 2018). A Jupiter team needs to manage performance pressure (Gardner, 2012), so interventions that provide support via leadership and/or work design may be optimal. Thus, the archetypes underscore the need for a customized rather than a blanket approach to the implementation of interventions. Part of this customization of team interventions is also likely to also be contingent on the team's context (including industry, organization, and task). Bresman and Zellmer-Bruhn's (2013) framework could be a useful starting point to understand these constraints and enablers of team archetypes.

A second practical implication is that our archetypes extend the key characteristics of "high-performing teams" (Katzenbach & Smith, 1993), to include as a key characteristic the ability to change the team's performance trajectory when warranted. Prior literature on team performance and development has addressed enabling conditions for setting up high-performing teams at the outset of the team life span (e.g., Hackman, 2012). We suggest this literature needs to be recast. Are enabling conditions at the outset of a new team, or new performance episode, the same enabling conditions that maintain momentum (i.e., consistent or increasing performance over time), and/or help to change the team archetype (i.e., turning around poor performing teams)? That is, in addition to knowing how to set themselves up for success such as Jupiter teams, we argue that teams (and their leaders) should also know how to increase performance from low levels of performance such as the Odysseus archetype, and turn around the stagnating/poor performance of the Pluto and Icarus archetypes. The ability to see patterns of performance over time—thus identifying the archetype of the team—is a critical, practical first step for those who wish to improve team performance.

Conclusion

Just as we advocate that teams have important patterns of change in performance over time, the literature on team performance has its own trajectory. It is our hope that this trajectory has more in common with the story of Odysseus than with the story of Icarus! More seriously, to reflect and incorporate the dynamic and complex modern world of organizations and work, researchers will need to break free from the constraints of prior models of team effectiveness and development to consider other ways of characterizing change in performance over time. Our aim was to facilitate this journey with a conceptual model of team performance archetypes. We hope to see further creative and inspiring developments in the consideration of patterns of team performance over time in the upcoming decade and beyond.

Appendix

Journals Included in Literature Review.

Academy of Management Journal	Journal of Business Ethics	Leadership Quarterly
Academy of Management Learning and Education	Journal of International Business Studies	Management Science
Administrative Science Quarterly	Journal of Management	Organization Science
Group and Organization Management	Journal of Management Studies	Organizational Behavior and Human Decision Processes
Human Performance	Journal of Occupational and Organizational Psychology	Personnel Psychology
Human Relations	Journal of Organizational Behavior	
Journal of Applied Psychology	Journal of Vocational Behavior	

(continued)

Appendix. (continued)

Themes in Empirical Team Performance Literature, 2007 to 2017.

Theme	Sample studies	Methodology	Sample predictors of team performance
1. Traditional IPO/IMOI studies Team performance is *static*. Predictors sometimes collected before performance outcomes.	Primary studies: Algesheimer, Dholakia, and Gurau (2011); Balkundi, Kilduff, and Harrison (2011); Bradley, Klotz, Postlethwaite, and Brown (2013); Bresman (2010); Carton and Cummings (2013); Chi and Huang (2014); Cole, Bedeian, and Bruch (2011); Courtright, McCormick, Mistry, and Wang (2017); Cropanzano, Li, and Benson (2011); J. P. De Jong, Curseu, and Leenders (2014); B. A. De Jong and Elfring (2010); Dietz, van Knippenberg, Hirst, and Restubog (2015); Gonzalez-Mulé, Courtright, DeGeest, Seong, and Hong (2016); González-Romá and Hernández (2014); Griffith and Sawyer (2010); Hu and Judge (2017); Humphrey, Aime, Cushenberry, Hill, and Fairchild (2017); Kostopoulos and Bozionelos (2011); Lehmann-Willenbrock and Allen (2014); Mohammed, Alipour, Martinez, Livert, and Fitzgerald (2017); Mohammed and Nadkarni (2011); Palanski, Kahai, and Yammarino (2011); Pearsall, Christian, and Ellis (2010); Peters and Karren (2009); Schaubroeck, Carmeli, Bhatia, and Paz (2016); Schaubroeck, Lam, and Peng (2011); Schippers (2014); Stewart and Johnson (2009); ten Brummelhuis, Oosterwaal, and Bakker (2012); Tsai, Joe, Chen, Lin, Ma, and Du (2016); Zhang and Peterson (2011); Zhang, Waldman, and Wang (2012) Meta-analyses examples: Bell, Villado, Lukasik, Belau, and Briggs (2011); Castaño, Watts, and Tekleab (2013); D'Innocenzo, Mathieu, and Kukenberger (2016); Marlow, Lacerenza, Paoletti, Burke, and Salas (2018); B. A. De Jong, Dirks, and Gillespie (2016); Marlow et al. (2018); Mesmer-Magnus and DeChurch (2009); Salas, Cooke, and Rosen (2008); Stahl, Maznevski, Voigt, and Jonsen (2010)	Methodology is quantitative albeit varied • Multisource field studies (e.g., employee IVs and supervisor performance ratings) • Multimethod field studies (qualitative and survey research) • Multiple-study designs (lab, student, field samples) • Simulations and lab studies • Quantitative survey data sometimes collected across time periods; inputs, mediator deliberately sometimes collected at different times prior to performance Team types varied: Examples include student project, marketing, HR, manufacturing, customer service, logistics, engineering, finance, R&D, sales, drug development, project, front-line public safety services, technology sales, problem solving, audit/tax, management, police tactical/special unit, military, online gaming, entrepreneurial venture, virtual, anesthesia, sports	Inputs: team personality composition, goal orientation, cultural diversity, leader humility, temporal leadership, shared temporal cognitions, cross-functional understanding, conflict perceptions, personality, individual knowledge, social loafing, group conflict asymmetry, diversity of temporal orientations, expert inclusion, team charters, transactive memory, task routineness, collective orientation, demographic diversity, cultural diversity, team training Processes/mediators: team member monitoring, speaking up, providing assistance, giving instructions, information exchange, conflict management, team learning, backing-up, team building, collaborative planning, team adaption and team implicit coordination, self-managing behaviors, boundary-spanning behaviors, task debate, team goal monitoring, information sharing, communication Emergent states/mediators: group atmosphere, relationship and task conflict, trust, commitment, team potency, team efficacy, cohesion, psychological safety, team adaptiveness, shared leadership, task cohesion, task and relationship conflict, temporal conflict, humor patterns, collective humility, team trustworthiness

(continued)

Appendix. (continued)

Theme	Sample studies	Methodology	Sample predictors of team performance
2. Novel approaches to temporal issues Team performance is considered in a more *dynamic* way. Finer grained consideration of cause and effect as it relates to team performance; growth modeling used to focus on patterns of performance over time	Cordery, Morrison, Wright, and Wall (2010); Dierdorff, Bell, and Belohlav (2011); Gardner (2012); Lehmann-Willenbrock, Chiu, Lei, and Kauffeld (2017); Waller, Hagen, and Kaplan (2016); Lorinkova, Pearsall, and Sims (2013); Mathieu, Kukenberger, D'Innocenzo, and Reilly (2015); Mathieu and Rapp (2009); Murtha (2013); Villado and Arthur (2013)	Methodology is quantitative and qualitative • Multimethod field study • Surveys • Qualitative case studies • Statistical discourse analysis • Multilevel SEM, snapshots of performance predictors at early, middle, late stages of team life span • Bayesian estimation • Pooled interrupted time series • Simulation • Training and after-action reviews • Audio recordings coded for interaction-level focus • Random coefficient growth modeling in HMLM, multilevel growth modeling Team types: problem solving, audit, consulting, student "new venture," wastewater treatment, airline flight crews, student simulation teams, student project teams	Context: contextual performance pressure, routine/nonroutine Inputs: team declarative knowledge, task uncertainty, autonomy, team charters, team performance strategies, psychological collectivism Processes/mediators: team patterns of interpersonal interaction and communication, task debate, task conflict, in-process planning, backing-up behavior, performance monitoring Emergent states/mediators: dynamic positivity, team efficacy, openness of communication, cohesion, team adaptiveness, interaction patterns, team-member exchange

Note. IPO = input–process–outcome; IMOI = input–mediator–output–input; IV = independent variable; HR = human resources; R&D = research and development; SEM = structural equations modeling; HMLM = hierarchical multivariate linear modeling.

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Notes

1. We gratefully acknowledge an anonymous reviewer's suggestion here.
2. We were amused to discover evidence of the existence of the Odysseus archetype in a study on leadership in teams (Lorinkova, Pearsall, & Sims, 2013), as Odysseus himself was a legendary heroic leader.
3. We want to thank an anonymous reviewer for suggesting we include the basic logic behind the growth modeling process.

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