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Leveraging a team-centric approach to diagnosing multiteam system functioning: The role of intrateam state profiles☆

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ABSTRACT

The increased reliance on team-based structures within 21st century organizations has sparked a stream of research investigating the drivers of collaboration within and across multiteam systems (MTS), comprised of distinct, interdependent component teams. To date, MTS research tends to rely on the simplified—and potentially inaccurate—assumption that component teams within a MTS are homogenous with regard to their emergent intrateam properties (e.g., team attitudes, behaviors, cognitions). We suggest that team-centric approaches may better characterize the ways in which emergent intrateam properties might vary across different MTS component teams—operationalized with what we term 'intrateam state profiles.' Leveraging cancer care MTSs as an illustrative example, we detail the need for team-centric approaches as complementary to traditional, variable-centric approaches to studying collective phenomena. Specifically, we explore intrateam state profiles as a mechanism for understanding complex interactions of emergent properties within teams that may profoundly affect system functioning and associated HRM practices.

1. Introduction

Across a variety of contexts (e.g., healthcare, emergency response, business, military, scientific collaboration, space exploration) organizations are increasingly relying on interdependent collective entities comprised of two or more teams, known as multiteam systems (i.e., MTSs; Mathieu, Marks, & Zaccaro, 2001), to accomplish important, complex, and interdisciplinary challenges (Shuffler, Jimenez-Rodriguez, & Kramer, 2015; Zaccaro, Marks, & DeChurch, 2012). MTSs are assembled or emerge with the assumption that synergistic efforts across multiple component teams are needed to achieve one or more shared superordinate goal(s). However, as is often the case within single teams (Steiner, 1972), the MTS 'whole' is not always greater than the sum of its constituent team 'parts.' MTSs often struggle to align efforts across component teams and may experience between-team process losses that detract from

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system performance (e.g., communication breakdowns, misunderstandings, conflict, and/or distrust between teams; Lacerenza, Rico, Salas, & Shuffler, 2014; Luciano, DeChurch, & Mathieu, 2015; Shuffler et al., 2015). Thus, a primary goal of MTS research has been to identify drivers of collaboration and coordination processes—within, but especially across, multiple component teams—related to MTS effectiveness.

Conducting MTS research presents numerous challenges in terms of theory (e.g., specifying appropriate levels of analysis for key phenomena; Aiken & Hanges, 2012), data collection (e.g., collecting sufficient samples of comparable systems; Resick, Burke, & Doty, 2012; capturing sufficiently high-resolution interactions; Aiken & Hanges, 2012), and analyses (e.g., Coen & Schnackenberg, 2012), requiring researchers to make certain simplifying assumptions as they investigate specific aspects of multiteam functioning. For example, most prior empirical studies of MTS effectiveness have focused on how top-down and system-wide strategies or interventions uniformly produce desired effects across a system as a whole (e.g., interteam-coordination; Davison, Hollenbeck, Barnes, Sleesman, & Ilgen, 2012; DeChurch & Marks, 2006; system-wide shared mental models; Murase, Carter, DeChurch, & Marks, 2014). These prior studies relied on the simplifying assumption that the teamwork processes (e.g., information sharing norms, conflict management styles, backup behaviors) and psychological states (e.g., team trust, team cohesion, collective efficacy, shared mental models, Kozlowski & Ilgen, 2006) that emerge and evolve within component teams (i.e., emergent intrateam properties) are—or should be—fairly homogenous across different teams in the same system.

However, MTS theory affirms that each component team in a MTS is actually characterized by its own set of unique features, including, but not limited to, the team's composition, expertise, contributions, norms, goals, and organizational constraints (Luciano et al., 2015; Zaccaro et al., 2012). As a result of unique team features, the emergent properties characterizing one component team in a MTS can be very different from those of another team in the same system. Importantly, there may be certain emergent properties within teams, or combinations of intrateam properties (e.g., high levels of team cohesion and low levels of team conflict) within and across teams that pose problems for interteam collaboration and MTS performance.

Herein lies a major challenge for moving the human resource management (HRM) of MTSs forward: by primarily focusing on top-down practices (e.g., selection, training, organizational design) targeting system dynamics as a whole and assuming homogeneity of emergent properties across teams, the existing MTS empirical evidence base does not clarify how intrateam properties might differentially manifest in component teams, nor how these differences might result in more complex or challenging interteam interactions across systems. In the long run, discounting the ways in which emergent processes and states manifest differentially across teams, and in turn, ignoring the effects of intrateam properties on interteam dynamics, could reduce the practical effectiveness of our HRM practices by leaving important boundary-conditions under-investigated.

In this review, we advance the use of team-centric approaches (O'Neill, McLarnon, Hoffart, Woodley, & Allen, 2015; O'Neill & McLarnon, 2017) in MTS contexts as one way of capturing the complexities of emergent properties within MTS component teams—operationalized with what we term their 'intrateam state profiles'—while also mitigating some of the complexity involved in studying these properties. Traditionally, organizational research has relied on variable-centric approaches to conceptualize and study individual and collective phenomena. Such approaches focus on the independent effects of different predictor variables on outcomes. For example, variable-centric research on teams has examined the effects of mean levels of task conflict, relationship conflict, and process conflict on team performance, treating these variables as if they exist independently from one another. In contrast, person- or team-centric approaches holistically examine multiple properties of individuals or groups simultaneously and assume that there are qualitatively distinct patterns in mean levels across these properties that tend to appear naturally. For instance, O'Neill et al. (2015) applied a team-centric lens to identify commonly occurring latent patterns, or 'profiles,' of team conflict. Their findings indicate that certain levels of task, relationship, and process conflict tend to coexist in teams and suggest a meaningful way for managers or consultants to diagnose teams with regard to multiple interrelated constructs.

We extend foundational work on these approaches to suggest that MTS researchers can leverage team-centric approaches and profiles to better diagnose the variations of internal properties of MTS component teams (i.e., their intrateam state profiles). In turn, intrateam state profiles can be used to investigate how emergent properties of component teams might facilitate (or hinder) interteam collaboration and MTS success. In the following, we first review the limitations of current theoretical and methodological paradigms for diagnosing emergent properties of MTS component teams. Then, we advance the use of team-centric approaches within MTS research. In closing, we offer propositions and directions for future research and practice.

2. Theoretical & empirical foundations: emergent properties in multiteam systems

In this section, we set the context for our review and advancement of a team-centric approach to incorporating emergent properties of component teams into research on MTS functioning. First, to ground the concepts presented in this review, as well as highlight their practical implications, we leverage an exemplar MTS context, comprised of multiple teams who are each involved in ensuring the effective treatment of a patient diagnosed with cancer. Then, we evaluate extant approaches used to examine emergent intrateam properties in MTSs, highlighting the limitations of predominant variable-centric approaches for understanding multiple, co-existing, collective constructs. For our purposes, the examples of cancer care MTSs presented are meant to be illustrative in nature and are not descriptive of all types of cancer care MTSs. Importantly, we utilize published sources describing cancer care MTSs (e.g., Gerber et al., 2016; Weaver, 2016) and constructs identified as important to general MTS functioning (e.g., Luciano et al., 2015; Shuffler et al., 2015) to ground our example.

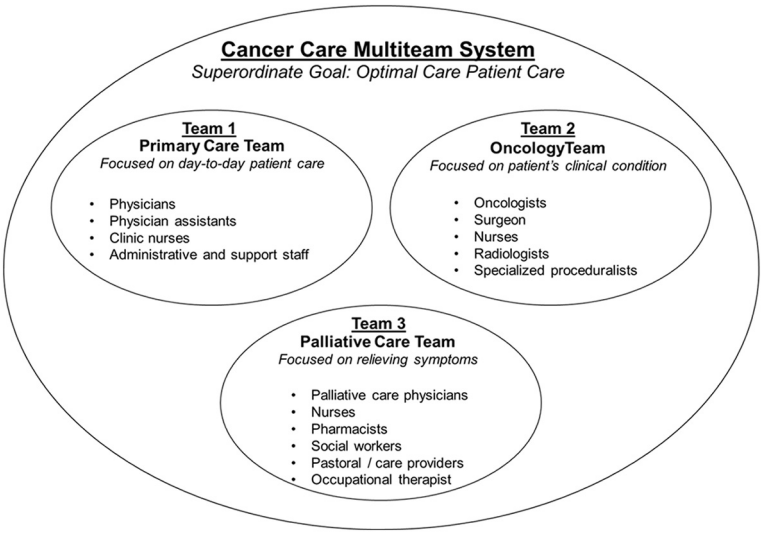

Fig. 1. Example Cancer Care Multiteam System Structure.

2.1. Cancer care multiteam systems as an embedding example

The complexity of cancer treatment means that no single team of specialists is capable of performing the task of patient care and treatment alone. Instead, cancer care requires inputs from and interactions across multiple teams of experts and support personnel (Gerber et al., 2016; Weaver et al., 2014). For example, cancer care MTSs often involve: (a) a primary care team, consisting of the patient's primary care physician or practice and accompanying administrative and clinical support staff; (b) an oncology team, comprised of oncologists, surgeons, nurses, radiologists, and other specialized proceduralists; and (c) a palliative care team, comprised of palliative care physicians, nurses, pharmacists, social workers, and pastoral care, among others (see Fig. 1).

To some degree, each component team in the cancer care MTS example is expected to handle separate aspects of the larger shared superordinate goal of optimal patient care. The primary care team is focused on day-to-day patient care activities such as monitoring and documenting physiological data, performing routine tests, or managing non-cancer related illnesses or symptoms. Ideally, this team will supervise the overall care as the patient experiences different clinical episodes or conditions, including those that may or may not be related to the cancer itself. The oncology care team is focused on the patient's clinical condition. This team will strive to 'cure' the patient (i.e., to promote cancer remission) through optimizing treatment options best suited for the patient's type and stage of cancer. Finally, the palliative care team focuses on relieving patients from the symptoms of pain as well as physical and mental stress that result from having a chronic health condition (Gerber et al., 2016; Waldfogel et al., 2016). In addition to these more proximal goals, all component teams in a cancer care system must coordinate their actions and interact interdependently as a MTS to diagnose, treat, and optimize care for the patient and ensure that the patient and his/her family understand all options and potential issues along the way (Waldfogel et al., 2016).

2.2. The importance of interteam & intrateam emergent properties in multiteam systems

Emergent collective phenomena are critical to the functioning and success of complex systems like the exemplar cancer care MTSs. Indeed, research on team effectiveness has long established that the emergent affective (e.g., trust, cohesion, identity), motivational (e.g., collective efficacy), and cognitive (e.g., shared mental models; transactive memory systems) psychological states, and behavioral processes (e.g., teamwork processes) that arise within teams constitute key mediators linking team inputs to team outputs within and across performance cycles (e.g., Hackman, 1987; Ilgen, Hollenbeck, Johnson, & Jundt, 2005; Kozlowski & Ilgen, 2006; Marks, Mathieu, & Zaccaro, 2001; Mathieu, Maynard, Rapp, & Gilson, 2008; McGrath, 1984). In MTS contexts, at minimum, important emergent properties characterize collectives at two levels of observation: across teams (i.e., the interteam or system level) and within teams (i.e., the intrateam level). Table 1 provides a summary of the emergent processes and states that have been identified thus far as being important at the interteam and/or intrateam levels.

Research investigating emergent interteam properties considers how members feel, act, and think from a systems-level perspective by examining the emergent processes and states that arise across the bounds of different MTS component teams (e.g., interteam coordination, communication, or trust between teams). This level of analysis is derivative of research on intergroup relations, which focuses on how various forces give rise to social processes and perceptions between distinct groups (e.g., Tajfel & Turner, 1979). Emergent properties at the interteam level are crucial to the overall effectiveness of MTSs. Indeed, effective diagnosis, treatment, and care optimization for cancer patients hinges on the patterns of interaction processes and psychological properties connecting members of different component teams.

Accordingly, HRM tools and practices that have resulted from MTS research have primarily been top-down practices, such as

Table 1
MTS intra- and inter-team emergent properties examined in existing literature.
Adapted from Shuffler et al., 2015.

MTS intra- and inter-team emergent properties examined in existing literature		
	Intra (Team)	Inter (MTS)
Affect/motivation		
Climate for information sharing		✓
Cohesion	✓	✓
Efficacy	✓	✓
Perceived advantages for information sharing		✓
Psychological safety		✓
Social identity	✓	✓
Trust	✓	✓
Behaviors		
Action behaviors	✓	✓
Adaptation		✓
Conflict	✓	✓
Communication	✓	✓
Coordination (horizontal)	✓	✓
Coordination for readiness		✓
Coordination (vertical)		
Decision making		✓
Information sharing		✓
Interpersonal behaviors	✓	✓
Leadership	✓	✓
Leader boundary spanning		✓
Leadership functional	✓	✓
Leader coordination	✓	✓
Leader strategizing	✓	✓
Network leadership		✓
Planning		✓
Risk mitigation		✓
System monitoring		✓
Transition behaviors	✓	✓
Cognitions		
Shared mental models		✓
Transactive memory systems	✓	✓

leader training (DeChurch & Marks, 2006), assigned coordination structures (Davison et al., 2012), frame-of-reference-training (Firth, Hollenbeck, Miles, Ilgen, & Barnes, 2015), and centralized planning procedures (Lanaj, Hollenbeck, Ilgen, Barnes, & Harmon, 2013), targeting the development of system-wide interteam processes (e.g., interteam coordination; Davison et al., 2012) or psychological states (e.g., interteam interaction mental models; Murase, et al., 2012) that are predictive of MTS performance.

Research investigating emergent intrateam properties addresses the processes and/or psychological states within component teams. Emergent psychological and behavioral properties of teams have been a primary focus of research on team effectiveness for many decades. Initial research in MTSs has begun to connect intrateam properties to those at higher levels by attending to how team properties may subsequently foster or stifle interactions with other teams in the system and influence MTS performance. For example, Lanaj et al. (2013) showed that empowering component teams to develop plans for the system as a whole (i.e., an intrateam process), which are then passed to a formal leadership team for final approval, can lead to excessive risk-seeking and coordination failures across the system (i.e., interteam processes). Further, DeChurch and Zaccaro (2010) argue that certain emergent intrateam properties can generate countervailing forces in multiteam contexts such that they produce different effects at different levels of observation (e.g., team cohesion might support team performance but detract from interteam information sharing).

Moreover, studies have offered new insights for understanding the functioning of collectives. MTS research suggests that there are certain collective constructs that may need to be operationalized differently between teams, as compared to within teams, to assess their effects on MTS level functioning (Shuffler, Rico, & Salas, 2014). For example, at the team level, having high levels of team cohesion and trust can have a positive impact on team effectiveness; however, at an MTS level, it is not necessarily possible or logical for everyone in a system to feel cohesive with or trust every other member of the system (DiRosa, 2013). Additionally, DeChurch et al. (2010) demonstrated that interteam properties, such as interteam trust, can have complex effects for MTS functioning, in that high levels of interteam trust may create a more suitable environment for collective leadership. Conversely, when there is low interteam trust, vertical leadership is more suitable for MTS functioning.

2.3. Patterns of emergent properties in multiteam systems

The potential for intrateam, as well as interteam, properties to emerge and evolve across systems paints a highly complex picture

Table 2
Example snapshot of emergent intrateam properties in a cancer care MTS.

Component team & contribution	Current inputs	Current pattern of co-existing intrateam emergent properties
Primary care team Contribution: monitor & manage day-to-day patient cancer & non-cancer related care	Longest relationship with patient; small team with no recent turnover; located outside of hospital system; Physician is team leader	- Strong team identity, team trust, team cohesion, and team collective efficacy - Strong sense of identification with system - High level of shared understanding with regard to system-level and team-level goals - Strong intrateam process norms stemming from leader that is focused on coordinating care via clear communication among members, encouraging both information seeking and sharing - Low levels of relationship, process, and task conflict
Oncology team Contribution: optimize treatment of patient's cancer	Established relationship with patient; moderate sized team with low turnover; located internal to hospital system; Physician is team leader	- Moderate team identity, team trust, and team cohesion, but high team collective efficacy - Weak sense of identification with system - Low level of shared understanding due to confusion about team-level goal (getting the patient into a clinical trial vs. optimized care) - Moderate intrateam process norms stemming from leader focused on coordination of care on clinical trial; information seeking and sharing is only encouraged in relation to getting patient engaged in clinical trial - Moderate relationship conflict, but low levels of process and task conflict
Palliative care team Contribution: manage physical and mental health symptoms resulting from chronic illness	Newly added to the MTS, limited interaction with patient; diverse set of individuals and high turnover; located internal to hospital system; no clear team leadership structure	- Weak team identity, low levels of team trust, team cohesion, but high team collective efficacy and motivation - High level of shared understanding with regard to team-level goal of relieving patient symptoms - Extensive amount of information seeking and sharing going on as team is trying to get structure in place, but chaotic pattern of coordination processes due to need for role clarification, especially regarding leadership - Moderate relationship, process, and task conflict

of emergent phenomena in multiteam contexts. Specifically, in addition to processes and psychological states connecting teams to one another, MTSs may be characterized by very different properties within teams. Indeed, MTS theory clarifies that component teams are often assembled into larger systems because of their potential to offer unique resources, knowledge, skills, abilities, and perspectives needed to address broader superordinate goals (e.g., Mathieu et al., 2001; Zaccaro et al., 2012). However, different combinations of resources, KSAs, and perspectives are also likely to result in different combinations of emergent processes and psychological states within different teams.

As an illustration of how intrateam emergent properties might differentially manifest across component teams, Table 2 summarizes a snapshot of intrateam emergent properties that, based on our current literature, would be likely to exist in our example cancer care MTS, along with potential inputs that may have shaped the emergence of such properties at this point in time. As the third column of Table 2 indicates, the component teams in the cancer care system are each characterized by different patterns of co-existing emergent processes and psychological states. First, the primary care team has an established relationship with the patient. With regard to emergent intrateam properties, they are a highly functional team whose members have a strong sense of identification and shared mental models regarding goals. Additionally, this team has a strong leader focused on coordinating patient care and encouraging dense patterns of information seeking and sharing within the team. As a result, there are low levels of conflict and the team operates as a trusting, cohesive unit.

The oncology team, however, is led by a physician with a vested interest in new clinical trials as treatment. However, not all team members agree the clinical trial is the best avenue for this patient. This misalignment in how to best achieve their goals has resulted in moderate to low levels of affect and a decreased identification with the system as a whole. Despite this, however, their past experience together has resulted in strong motivation and efficacy that they can treat the patient, supported through moderately strong leadership, coordination, and communication behaviors.

Finally, due to recent turnover, the palliative care team is the newest to the system and has had little prior interaction with the patient. The constant changes in team membership have resulted in a lack of clear roles and leadership structure causing chaotic patterns of coordination, low levels of affect, and high levels of internal conflict. However, all team members are highly motivated to support the patient and believe that by working through their issues, they can be successful.

Individually, the combinations of emergent psychological states and behavioral processes within each of these three component teams may impact their individual contributions to the system as a whole. For example, the primary care team, which is focused primarily on ensuring overall effective patient care, may tend to reach out regularly to the other component teams. In contrast, the oncology team contains a strong leader who, in pursuit of a team-level goal (i.e., enrolling the patient in a clinical trial), has set a

norm for information sharing related only to the team-level goal. Thus, oncology team members may be more averse to openly sharing information with members of other teams who are not as focused on the clinical trial aspect of the task. Finally, the palliative care team, whose internal processes are relatively more chaotic, might reach outside the bounds of their own team and look for leadership from members of other teams to gain some stability. Alternatively, members of this team may be so de-motivated that they do not exert much effort towards the overall system goal of patient care.

Furthermore, the differences between teams with regard to their emergent properties are likely to have significant ramifications for system functioning. Indeed, Luciano et al. (2015) suggest that when MTSs are comprised of teams with very different work processes, norms, and cognitions, members often turn towards fellow teammates for information and social affiliation and away from members of other teams, thus stifling the emergence of interteam processes and psychological states. In our example, although both the primary care and oncology teams are characterized by strong internal norms for information sharing and coordination patterns, these norms are not entirely compatible suggesting potential decrements in performance when members interact across teams. Indeed, Standifer (2012) argues that teams develop internal 'rhythms' governing the pace and cycle of their teamwork processes, which, when misaligned with other teams in the system, can hinder effective interteam collaboration and coordination.

Many critical questions remain, however, regarding which similarities and differences between teams are most critical to system functioning and performance, and when these similarities/differences most relevant. For example, we might assume that the palliative care team and the oncology team will be able to work together effectively, given that they are both proximally located within the same hospital. However, the palliative care team differs substantially from both other teams with regard to the strength and/or level of their internal emergent properties (e.g., trust, cohesion, coordination norms), potentially limiting their ability to see eye-to-eye on interteam functioning.

Table 2 represents only one snapshot of what is undeniably a complex and dynamic process where patterns of co-existing emergent properties develop and change over time within and across teams. Core work within, and interdependencies among, the component teams in cancer care delivery systems will inevitably change over time in response to the patient's clinical, social, psychological, and economic support needs. Initial differences in the teams' internal properties and/or problematic properties (e.g., high levels of conflict within the palliative team) may become exacerbated and increasingly problematic during end-of-life decision-making as the care process shifts from promoting cancer remission to emphasizing symptom management for patients who are out of viable treatment options (Waldfogel et al., 2016).

In summary, MTS theory and research clarifies that emergent properties at both interteam and intrateam levels shape system functioning and performance, and these properties emerge and evolve over time. Moreover, prior work suggests that intrateam properties–and the differences across teams with regard to their intrateam properties–can have significant bottom-up effects on interteam processes and system success. However, as we review in the following section, extant research on MTS effectiveness, which has relied heavily on traditional variable-centric approaches and assumptions leaves many questions unanswered with regard to the aspects of emergent team properties that are most relevant to system functioning.

2.4. Limits of current literature on emergent intrateam properties in MTSs

Although MTS theory suggests that component team contexts can be very different from one another with regard to a variety of emergent and dynamic properties, empirical research on MTSs has not yet clarified: (a) the sets of emergent intrateam properties within a single component team that make interteam collaboration more productive or more challenging for its members; (b) the sets of emergent intrateam properties across multiple component teams that are the most relevant to interteam functioning (e.g., differences between teams with regard to one or more emergent property); nor (c) the ways in which emergent properties within teams or differences in emergent properties across multiple teams might evolve and interact over time. Instead, most prior research on MTS functioning has tended to assume that intrateam properties are relatively homogenous across all teams in the system and static over time. Such simplifying assumptions regarding emergent team properties are understandable given the high levels of complexity involved in studying MTSs. However, assuming that emergent states, such as team cohesion, motivation, or collective cognition, emerge identically across complex interdependent systems is rarely reflective of reality, potentially limiting the generalizability of HRM practices.

We suggest that one reason why MTS research has needed to rely on the simplifying assumption that component team properties emerge identically across teams is our reliance on variable-centric approaches to studying collective constructs. Specifically, paralleling research on single teams, the predominant approach to studying individual and collective phenomena in MTSs has been to identify important variables (e.g., leadership, inter-team coordination, performance) and clarify the ways in which these variables influence team and system effectiveness (Coen & Schnackenberg, 2012). Such a view focuses on how different variables separately and uniquely influence outcomes (Wang & Hanges, 2011).

Using a variable-centric approach often draws inferences regarding a property's influence on team functioning while controlling for other variables that may also have influential effects (Muthen & Muthen, 2000). Likewise, the majority of MTS research has been variable-centric, focusing on isolating and studying the impact of different factors contributing to system effectiveness (Shuffler et al., 2015). We do not mean to imply that variable-centric views are not critical for advancing MTS science. Indeed, given the vast number of constructs that may be relevant to MTS theory, developing a solid grounding for MTS research involves parsing out key constructs as an initial step. However, a variable-centric approach can result in several limitations related to understanding how emergent properties manifest across MTSs.

2.4.1. Limitation 1: inaccurate assumptions of population homogeneity

First, variable-centric approaches stem from an assumption that the population of interest is homogeneous (Pastor, Barron, Miller, & Davis, 2007). Indeed, the ultimate goal of the variable-centric approach is to account for variance within the criterion of interest by providing a snapshot of the variables aggregated across the entire sample. For MTSs, this means an assumption that the individuals and component teams comprising MTSs are similar enough to permit comparisons. However, this assumption of population homogeneity is violated in many realistic MTS contexts, where meaningful differences may exist across subgroups (Shuffler et al., 2015; Zaccaro et al., 2012). For example, Table 1 above depicts our three exemplar component teams with different goals, norms, and leadership structures, with very different resulting patterns of emergent processes and psychological states. Ultimately, while the variable-centric approach allows researchers to draw inferences that subgroups might exist, they cannot be clearly identified (Meyer, Stanley, & Vandenberg, 2013).

2.4.2. Limitation 2: difficulty in testing & interpreting complex interactions

Second, the traditional variable-centric focus on two or three constructs of interest can greatly oversimplify the co-existing and interactive effects of the multiple types of emergent states and processes that might occur across component teams in MTS contexts. Each component team has its own unique set of processes and emergent states that simultaneously operate to impact the system as a whole (Bearman, Paletz, Orasanu, & Thomas, 2010). As such, there is a complex interaction of team and system properties that linear approaches cannot account for (Cronin, 2015). Coupled with the fact that variable-centric analyses are limited in power when detecting interactions of three or more variables via moderated multiple regression (Agunis & Gottfredson, 2010), researchers run the risk of only understanding isolated relationships and not obtaining a holistic picture of collective functioning.

For example, there are many 3-, 4-, and 5-way interactions suggested in the cancer care MTS example in Table 2, and many more possible when considering the larger number presented in Table 1. Whereas reviewing these interactive effects qualitatively can provide meaning in terms of understanding which teams may be able to support one another and which ones may have detrimental effects on successful between team interactions, trying to actually conduct statistical analyses for these complex interactions might be meaningless due to a lack of statistical power (Wang & Hanges, 2011). Further, even if it was possible to test these complex interactions, applying meaning to all of the potential combinations of variables would be nearly impossible and certainly not practical, given that most of the interactions might not actually exist in real MTS contexts.

2.4.3. Limitation 3: narrow understanding of complex interactions

Finally, one of the main attributes of an MTS, as explained by Zaccaro et al. (2012), is how they are shaped and formed over time (i.e. developmental attributes). Indeed, research shows that MTSs may rapidly change as a function of time and differing demands, with systems fluctuating in their stability and variability (Luciano et al., 2015). Even within a relatively confined context such as a cancer care MTSs, environmental factors like shifting interdependencies may influence how important it is for certain teams within the MTS to “get along” at different points in time (DiazGranados, Dow, Perry, & Palesis, 2014; Uitdewilligen & Waller, 2011).

Although current research of MTSs can address these temporal dynamics via variable-centric longitudinal analyses, their limited foci are not providing the whole picture. Due to the inherent complexities of MTS functioning, there are numerous ways in which changes in certain variables necessitate compatible changes in other variables. For example, Fodor and Flestea (2016) note the co-existence of communication networks, situation awareness, and leadership can have evolving effects on one another. They note that that the degree to which communication structures change can shape situation awareness, which in turn further shapes the communication network depending on how accurate leaders and component teams perceive their situation awareness to be, and may require leaders to change their communication patterns to correct inaccurate situation awareness. Advanced methods such as social network analysis (Slaughter, Yu, & Koehly, 2009), relational event modeling (Leenders, Contractor, & DeChurch, 2016), and computational modeling (Kennedy & McComb, 2014) are beginning to offer more fine-grained investigations of such complexities. However, data collection approaches underpinning these methods are still typically grounded in variable-centric operationalizations of key constructs.

2.5. Summary

Despite recognition that: (a) emergent and evolving properties of MTS component teams are relevant to system functioning and success; and (b) component teams in the same system are sometimes very different from each other; knowledge is limited as to how affective, behavioral, cognitive, and motivational emergent properties manifest simultaneously, and in different ways, within different component teams, and the resulting effects of co-existing team properties on system effectiveness. Accordingly, researchers investigating the cancer care delivery system described above might analyze how the variables of identity and conflict interact with one another. Via simple regression one might find that the two variables are significantly, negatively related; then, via moderation analyses, find that this relationship is stronger when there is a leader acting as a boundary spanner across component teams. However, if not all MTSs are the same, these findings might hold for a significant portion of the MTS population but not others. Perhaps there is another contextual variable such as the tenure of the component teams that is not being captured in these analyses. Thus, while there is a value and indeed a necessity for leveraging a variable-centered approach in order to make advances in research, there may be other ways —such as team-centric approaches— to more fully explore how such variables may interact with one another.

3. Leveraging a team-centric approach in the MTS context

A team-centric approach for advancing MTS theory and practice is grounded in a growing literature that calls for a holistic understanding of the unit of interest, initially considered at the person level (i.e., person-centered) and recently expanded to the team level (i.e., team-centered). We follow others in using the term "team-centric" as an inclusive term to capture the idea that profiles can be expanded to describe how teams can have different subgroupings for a given set of variables (O'Neill et al., 2015). Paralleling these previous literatures, we further suggest that the combination of coexisting intrateam emergent properties are best operationalized as "intrateam state profiles" to identify meaningful patterns that exist in the MTS context. In the following, we provide a discussion of the origins of this type of approach, the value in extrapolating this lens to understand intrateam property differences, and the considerations for ensuring these approaches are appropriately applied to advance MTS theory and practice.

3.1. Origination of team-centric approaches & state profiles

The team-centric view is an extension of person-centered approaches, which propose that all individuals exhibit unique patterns of attitudes, cognitions, and behaviors that influence outcomes (Marsh, Ludtke, Trautwein, & Morin, 2009). The person-centered approach uses individual-level profiles to describe subgroups of individuals in a given population. Profiles, in this sense, are essentially different combinations of variables at their naturally occurring levels (e.g., low, medium, high). Organizational researchers have begun to utilize person-centric approaches in the commitment (Meyer et al., 2013), impression management (Bolino & Turnley, 2003), emotional labor (Gabriel, Daniels, Diefendorff, & Greguras, 2015), and organizational climate (Schulte, Ostroff, Shmulyian, & Kinicki, 2009) literatures, among others.

As explained by Laursen and Hoff (2006), person-centered analyses reject the assumption that the population is homogeneous with regard to the interaction of the focal variables. This rejection of homogeneity is what produces the emergence of groups of individuals who share similar patterns. Using these groupings, it is possible to cross-compare for a more all-inclusive understanding of how variables interact and individuals differ (Magnusson, 2003). In organizational research, the person-centric approach is typically used to explain that individuals exhibit different and meaningful patterns of attitudes, cognitions, or behaviors that impact organizational outcomes (Marsh et al., 2009).

Building on the person-centric approach, researchers have begun to consider the application of these types of profiles in team contexts. At a team level, profiles can provide a snapshot of where a team lies on a given set of constructs that are theoretically meaningful in combination with one another. These constructs could be inputs, such as team composition variables (e.g., personality, experience, motivation), team processes and emergent states (e.g., team attitudes such as trust, psychological safety, distrust, efficacy), or even team outcomes, given the multidimensional nature of performance (e.g., learning, objective performance, satisfaction; Hackman et al., 2000; Mathieu et al., 2008).

Notably, although others have used the term "profiles" in the team composition context, the use of this term has been in reference to the individuals comprising the team. For example, Mathieu, Tannenbaum, Donsbach, and Alliger (2014) describe a team profile model as one that collectively accounts for combinations of individual knowledge, skills, and abilities that will support the team in its work. This is in line with, but distinct from, what others suggest may be considered "state profiles" in the team-centric view, as this composition model focuses upon what each individual is bringing that will support team effectiveness. Alternatively, the state profile view focuses upon the coexistence of team-level states and processes, such a conflict or trust, in terms of what the team as an entity is thinking, doing, and/or feeling at a point in time.

For teams, state profiles can provide rich, team-level feedback that can be used to better understand how these variables may interact to influence team functioning. For example, O'Neill et al. (2015, 2017) provide some of the first insights into the use of a team-centered approach in their investigation of conflict state profiles at the team level. In the first series of studies, they drew upon extant research of the three dimensions of team conflict (i.e., task conflict, relationship conflict, process conflict) to hypothesize four profiles of conflict that were theoretically most likely to occur in teams. O'Neill et al. (2015) confirmed the emergence of three of their hypothesized profiles, which were then replicated in a separate dataset.

Interestingly, the profiles identified in O'Neill et al. (2015) also predicted team outcomes, such that the task conflict dominant profiles were the optimal profile for conflict management and potency. Further, for some teams, higher levels of task conflict may give way to increased relationship and process conflict, increasing frictions and reducing the ability to easily resolve such conflicts. These findings provide unique insights beyond the current team conflict literature, and offer clarification regarding the types of conflict profiles that may exist in teams, with the goal of eventually being able to better shape more efficient theory and research around such "real world" patterns. Indeed, O'Neill and colleagues (2017) expanded their initial work and successfully developed interventions with the aim of moving teams towards more effective conflict profiles.

3.2. Conceptualizing MTS intrateam emergent properties as intrateam state profiles

Moving from the team to the MTS context, using profiles offers the opportunity to take a more holistic view of MTS complexities. While different forms of profiles may be feasible in the MTS context, we suggest that intrateam state profiles may be most appropriate for better understanding complexities of emergent properties. Shaped by theory and prior variable-centric research, such profiles can serve to identify patterns of key emergent states and processes within component teams. Once identified, they can be used to examine more complex research questions, such as how differences in intrateam state profiles affect interteam emergent properties and outcomes over time.

3.2.1. The development of intrateam state profiles

While a full exploration of the intricacies of the profile approach is provided by other sources (e.g., Muthén & Muthén, 2007; Wang & Hanges, 2011) and beyond the scope of our current review, it is necessary to highlight a few relevant guiding principles when conducting this research. First, in terms of the content of intrateam state profiles, we present a high-level approach as a potential starting point, representing the four major categories of emergent properties most often identified as critical to team and MTS functioning (i.e., affective, motivational, behavioral, and cognitive; Luciano et al., 2015; Lacerenza et al., 2014; Shuffler et al., 2015). These categories have been utilized extensively in the team and MTS literatures to describe meaningful groupings of constructs that are related yet distinct in terms of their emergence in and impact on teamwork (Mathieu, et al., 2008). Accordingly, we utilize this organizing heuristic to provide a natural linkage between the existing variable-centric literature and our suggested profile conceptualization.

Additionally, each of these four components could also be broken down further into their own profiles, such as the team conflict profiles previously discussed. Further, it may also be reasonable to extract profiles using other MTS theoretical lenses, such as the key attributes that distinguish MTS compositional, linkage, and differential factors, as identified by Zaccaro et al. (2012); or the dynamism and differentiation of MTSs identified by Luciano et al. (2015) as a way to describe system complexities. The important consideration here is that there should be a clear, conceptual rationale regarding the inclusion of the variables. This can occur either through specific, theoretically driven deductive predictions as to what patterns might be likely to emerge, or through a more inductive examination of variables that may be theoretically or practically linked but without clear guidance as to the specific patterns that may result (Wang & Hanges, 2011).

Next, in terms of the data needed to extract intrateam state profiles, survey, observational, or similar types of quantitative data are all viable options. Essentially, data for determining profiles can be collected, and as needed aggregated, using the same methods as variable-centric research. Subsequently, testing for intrateam state profiles would carried out using statistical techniques such as latent profile analysis (LPA; Muthén & Muthén, 2007). Furthermore, LPA provides a means for not only identifying profiles but also for testing to determine if these groupings have antecedents which may predict their emergence, and the effects these groupings have on outcomes of interest (Muthén, 2002; Muthén & Muthén, 2007).

Finally, the capability to interpret profiles relies on identifying differences that are both qualitatively and quantitatively meaningful in nature. Quantitatively, profiles differ in the strength of variables within and also in the variance of levels across. Qualitative differences, however, mean that there are meaningful patterns to the quantitative scores across profiles (Marsh et al., 2009). For example, if we only extract profiles that result in a high, moderate, or low pattern for component teams, this does not really provide us with anything beyond what multiple regression might offer (Wang & Hanges, 2011). However, if component teams group into more complex patterns (e.g., high-high-high-high, low-high-moderate-low, low-low-high-low), they offer a distinct view regarding the multiplex of variables being studied. As such, using the cancer care example, we next describe a series of unique profiles and demonstrate how they may lead to different interteam states and processes.

3.2.2. An example of intrateam state profiles & their impact on a cancer care MTS

Based on the profiles presented in Fig. 2, the primary care team could be considered a highly functioning team when it comes to intrateam emergent properties, whereas the unclear goal focus and challenging leadership in the oncology team and general lack of relationship development in the palliative care team may bleed into how they all interact as a system. These profiles demonstrate that, while qualitative descriptions provide us with a rich understanding of what is happening for a specific team at a particular time, quantifying this data via intrateam state profiles allows for the systematic examination and extraction of similar patterns across a larger sample of component teams.

Utilizing the input-mediator-output (IMO) format of traditional team effectiveness models (Ilgen et al., 2005), Fig. 3 demonstrates where intrateam profiles, within each of the three cancer care teams, may fit as mediators of inputs and outputs within teams. Inputs from both the MTS and component team levels impact how these profiles may be initially shaped, whereby MTS-level inputs could incorporate factors such as the degree of interdependence with other teams, composition, and goals of the MTS, while team level inputs focuses on factors such as the composition of the component team, its tenure, and its subgoals, among others. For example, the physician team's experience working together may lead to a very cohesive and trusting environment, while the newness of the palliative care team may be associated with its more variable set of properties, as is common in diverse teams (van Knippenberg & Mell, 2016).

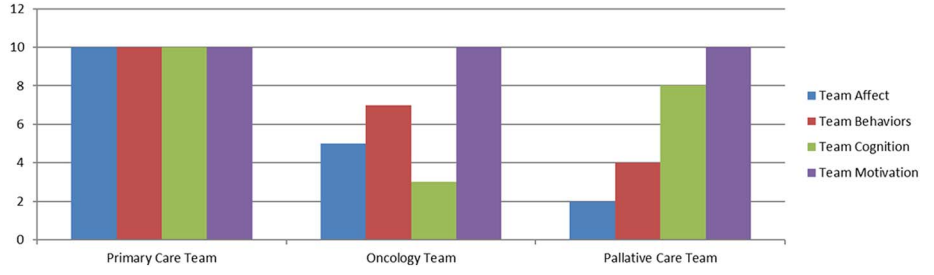

Fig. 2. Example of Intrateam State Profiles for Multiteam System Cancer Care.

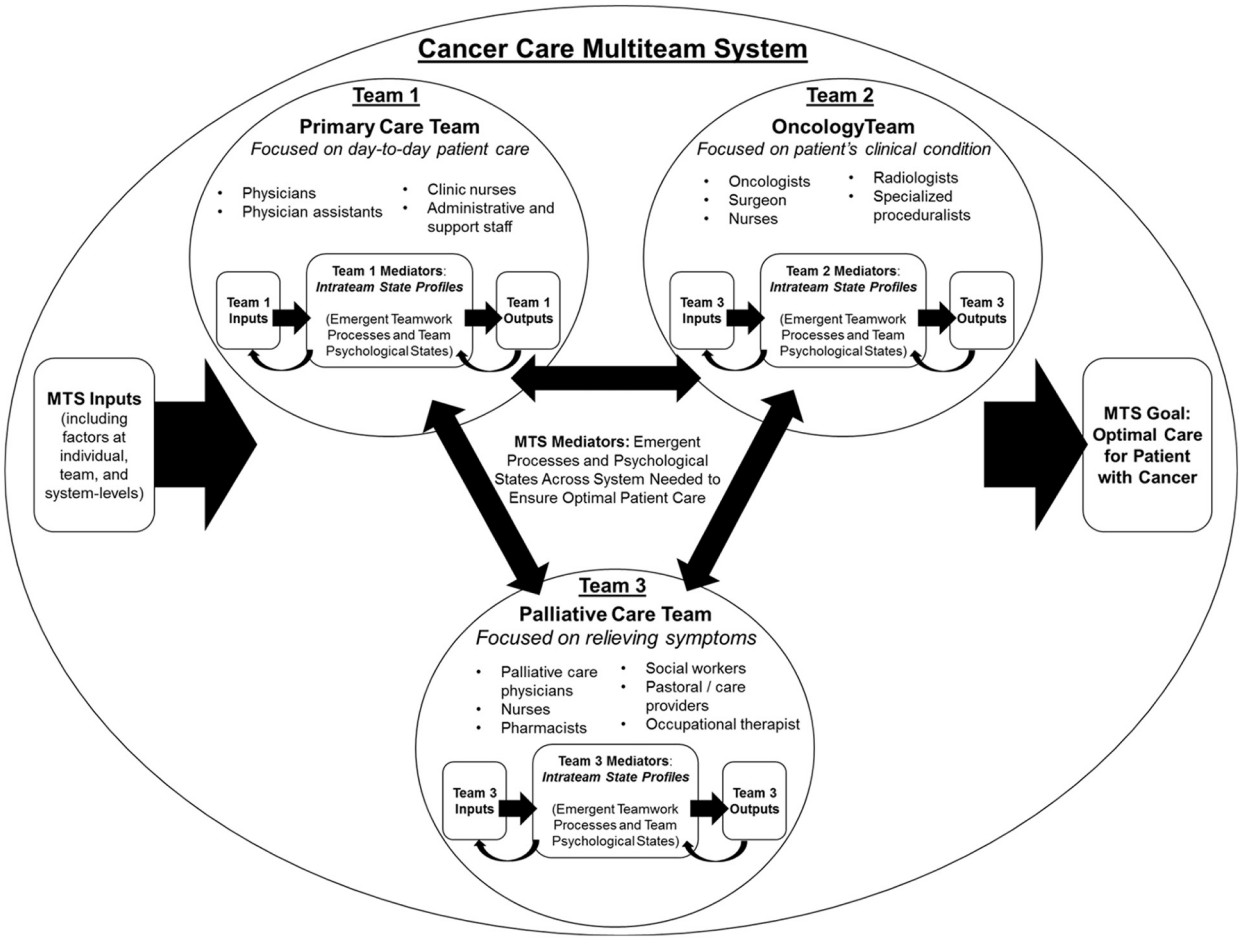

Fig. 3. Example Framework of Intrateam State Profiles as Embedded in Cancer Care MTS Context.

As these emergent properties develop together, the resulting profiles subsequently influence the outputs of these component teams, which can influence how teams interact with one another. Accordingly, the palliative care team's internal coordination challenges may prevent them from knowing when and how to share their valuable collective knowledge with other teams (Healey & Hodgkinson, 2010). Further, the oncology team leader's focus on the clinical trial may also result in poor information sharing if they only focus on sharing or seeking information that relates to supporting the patient's enrollment in a clinical trial (Murase, Carter, DeChurch, & Marks, 2014).

Finally, the primary care team's effective internal functioning and focus on the team and system-level goals has the potential to best support and overcome these interteam challenges, by helping the oncology team broaden their focus to the system level goal and supporting the palliative care team in setting up an effective structure for coordinating internally. However, an important point to note here is that while the palliative care team may welcome aid in providing structure, the similar leadership structures (i.e., formal, singular leader) in the oncology and physician teams may create conflict between these teams as they try to determine the best joint structure for leading, especially with conflicting goals (Lanaj et al., 2013). As a consequence, while the physician care team may be able to assist the palliative care team in becoming better coordinated internally, the system may struggle as an entity to align their interteam leadership, goals, and coordination, challenges that are all too common in MTSs (Shuffler et al., 2015; Zaccaro et al., 2012).

4. Towards an integrative model of intrateam state profiles & interventions

Thus far, we have identified the knowns and unknowns regarding MTS emergent properties from both interteam and intrateam views, and proposed a team-centric view of intrateam state profiles as a means for addressing gaps in our knowledge regarding the complexities of intrateam emergent properties. In order to better ground this somewhat abstract concept of intrateam state profiles, our final goal is to offer a more refined potential—and critical—direction for moving research forward. Specifically, we present a prospective research model (Fig. 4) with several initial propositions aimed at addressing how and when intrateam state profiles can help to pinpoint the alignments and misalignments of emergent properties that may challenge MTS functioning over time. Our organizing model follows the traditional IPO/IMOI organization (Ilgen et al., 2005), whereby inputs at multiple levels will influence

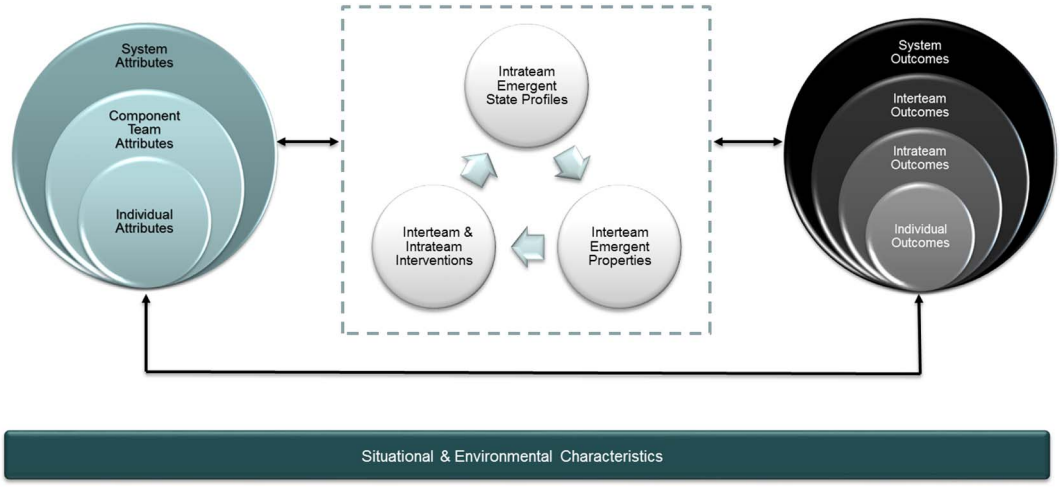

Fig. 4. Process Model of Intrateam State Profiles & Outcomes.

subsequent emergent properties, resulting in multiple levels of nested outcomes that subsequently feed back into the system as inputs and processes. While we acknowledge the importance of the multi-level inputs and outcomes to shaping how intrateam state profiles fit in the larger dynamics of MTSs, these factors have received extensive attention in other theories and frameworks, As such, we focus our discussion on the most novel aspect, the emergence and influence of profiles on interteam emergent properties. In particular, we address the role profiles in clarifying the right target for appropriate HRM practices, in the right place, at the right time.

4.1. Intrateam state profiles as predictors of Interteam emergent properties

We previously noted that leadership, information sharing, and coordination are some of the most critical yet challenging emergent interteam properties that play a role in influencing MTS outcomes (Davison et al., 2012; DeChurch & Marks, 2006). While prior literature has mainly focused on identifying system-level attributes that impact the emergence of such properties between teams (e.g., conflicting goal structures, Rico, Hinsz, Burke, & Salas, 2016; hierarchical vs. vertical coordinating structures, De Vries, Hollenbeck, Davison, Walter, & Van Der Vegt, 2016), we argue that identifying intrateam state profiles can also serve a key function in predicting these interteam emergent properties.

First, we have set up throughout this review the idea that intrateam state profiles can aid in focusing the wide field of complex patterns that could occur by clarifying those that are theoretically and practically meaningful. As we have noted, assuming component teams have the same levels of emergent properties is inappropriate; however, it can be easy to be overwhelmed with all of the possible combinations. Instead, identifying profiles is a way to find a balance, not trying to examine all possible combinations, but focusing on those that are expected from a theoretical and practical perspective. For example, in our cancer care MTS, we chose to exemplify certain patterns derived from existing empirical evidence, as well as practically feasible, to offer a possible explanation as to how subsequent leadership, coordination, and information sharing properties may arise between teams. As such, intrateam state profiles offer an advantage over more traditional variable-centric approaches by refining the wide range of complexities to a subset of real and interpretable patterns. This overarching argument, grounded in all of our prior discussions, serves to shape our first proposition:

Proposition 1. Intrateam state profiles depicting meaningful patterns of affective, behavioral, cognitive, and motivational emergent states in MTS component teams will be more predictive of interteam emergent properties than individual intrateam emergent properties alone.

Second, as we begin to identify these meaningful patterns of emergent properties within component teams, there is a need to explore how differences and similarities in profiles may shape interactions among teams. While it is easy to assume that similarities in profiles may be beneficial and differences negative, we know from the extant MTS literature that strong within team bonds may reduce the overall effectiveness of the system (DeChurch & Zaccaro, 2010). For example, strong leadership at the team level, such as in our cancer care oncology and primary care teams, may actually result in challenges to shaping an effective system-level leadership structure (DeChurch, et al., 2011). Further, it is possible that the similarities may actually mean teams within a system may all display similar, but dysfunctional, intrateam profiles. For example, if all of the component teams within the cancer care MTS had the same profile as the palliative care team, the lack of coordination and underdeveloped team attitudes within all component teams would undoubtedly have a negative effect on the interactions between teams (Burke, Shuffler, Heyne, Salas, & Ruark, 2014).

We propose that it may be most appropriate to conceptualize the interactions of intrateam state profiles in terms of their degree of alignment, or how much the component teams may serve to balance their strengths and weaknesses to serve the good of the system as a whole. Much like our understanding of diversity in teams (Harrison & Klein, 2007), the degree of alignment is about understanding

what aspects of profile variation in a given MTS context may result in teams being more or less compatible as a system. Intrateam state profiles may be aligned when they complement one another, whereby different strengths at the component team level may be used to support or serve as a model to other teams. For example, in our cancer care MTS, we suggested that the primary care team's high functioning emergent properties might serve to support to the palliative care team in terms of helping them work through how to coordinate as a team internally. Intrateam state profiles may also be aligned when they are similar, such as in cases where the teams are all high functioning internally, as this can in turn allow for the component teams to focus more upon the needs of the system overall. On the other end, misalignments may occur when teams simply are low functioning internally, or when they are too similar in their profiles, such as the examples described above. Overall, by identifying the degree to which teams may align in their emergent intrateam state properties, we propose that we can better predict when interteam emergent properties may be more or less effective.

Proposition 2. The degree of alignment among intrateam state profiles will predict interteam emergent properties, with greater alignment among component team profiles resulting in more effective interteam emergent properties.

Before moving further in breaking down our cycle of intrateam and interteam properties and interventions, there is a need to address one of the overarching components of our framework (Fig. 4), the antecedents. We began by focusing on the more novel aspects of the framework, but it is important to address the role of inputs, particularly in discussing alignment. As noted in our framework, there is a nesting of multiple levels of inputs, from the individuals composing the component teams, to characteristics of the teams themselves, to the broader context in which the MTS is operating as a whole. Such characteristics have been discussed at length in other typologies and frameworks (e.g., Zaccaro et al., 2012), and we do not intend to rehash their content here. However, we do want to acknowledge that intrateam state profiles may be affected by the inputs from the contexts in which they are embedded, both in terms of how they are shaped and the how these inputs may in turn shape how the intrateam emergent state profile of one team impact other component teams.

Of particular relevance is the role of interdependence among component teams. Zaccaro et al. (2012) note in their delineation of MTS attributes that the degree of interdependence among component teams in systems can have a critical impact, especially in terms of determining how important it is that the teams are able to interact with one another. In their original definition of MTSs, Mathieu et al. (2001) propose that component teams may be interdependent in three different ways: receiving inputs from other teams, interacting with them as part of their processes, or providing output to other teams. To be considered part of the system, teams must be interdependent in each of these three ways with at least one other team, although they do not all have to be with the same team (Mathieu, 2012).

Interdependency therefore may serve as an important input to the shaping not only of the emergent properties themselves, but especially in terms of how much the resulting profiles may impact other component teams. When interdependency between two teams is low, it is less likely that the state of the emergent properties for one component team will have as strong of an impact as to when the interdependency is high. This high to low continuum of interdependency operates both as a function of the number of interdependencies between teams (i.e., all three, two, or one), as well as the actual degree of reliance upon one another for that type (s) of interdependence; furthermore, this interdependency may shift and change over time, similar to the profiles themselves. As such, we utilize interdependency as an example of a key input that can subsequently influence the impact of intrateam state profiles and their relationship with interteam emergent properties.

Proposition 3. The relationship between the alignment among component intrateam state profiles and interteam emergent properties will be influenced by the degree and type of component team interdependence at a given point in time, whereby alignment of intrateam profiles will be more strongly associated with interteam emergent properties where interdependency is high between teams than when it is low.

4.2. Intrateam state profile alignment & multiteam system intervention

The second major unique element of our model is an attempt to more cohesively address the role of different levels and forms of interventions for MTSs. There is still much to be understood regarding how to help MTSs best function, and therefore this may be another key area where incorporating a team-centric, profile approach may be especially beneficial. In particular, identifying intrateam state profiles may serve as a uniting mechanism that can help to clarify when a single team, multiple teams interacting together, or an entire system requires attention to improve MTS functioning.

One of the major contributions of a team-centric approach to understanding MTSs is that it enables us to focus on both the team and system level issues that may arise as a function of component team profiles. As we utilized profiles to better understand the complexities of intrateam emergent properties, we can simultaneously examine the interactions and degree of alignment among the multiple teams that matters. As a result, it is not necessarily that we are using a team-centric, profile approach to only designate a “best” or “right” profile. Instead, this type of approach may be best suited for identifying the appropriate balance of emergent properties within and across teams. To achieve this balance, intrateam state profiles may be critical in moving towards a more appropriate selection of HRM practices and interventions that will address the right target.

In our current state of MTS science, interventions are largely focused on addressing one of three main targets. First, MTS interventions can be, and traditionally have been, implemented as system-wide improvements. Restructuring system and component team goals, implementing leadership structures, and providing system-wide training to encourage coordination have all served to reduce or proactively prevent deficiencies (Shuffler et al., 2015). While especially effective particularly from a preventative perspective, these broader interventions may not always be necessary for all teams in the system. Instead, it may be the case that only a

subset of teams, or even just two teams, may be experiencing interteam challenges that require an intervention. This second target of MTS intervention involves focusing on repairing across team communications, reconciling expertise differences between teams, or similar strategies that may only involve part of the MTS. Finally, the individual component teams comprising an MTS serve as a third and lowest level for targeted intervention, in terms of helping teams that are struggling, maintaining teams that are performing well, and/or developing component teams who may be ready to mature to a different level of performance.

Unfortunately, our MTS interventions to date do not systematically address which target level is appropriate for different developmental needs within and across systems. However, this is an area where intrateam state profiles may provide additional insight in terms of what levels are most appropriate to address. At the lowest level, simply providing feedback on a intrateam state profile can provide important insight to that component team. For example, identifying the profile of the palliative care team in terms of acknowledging their strong collective motivation to help the patient may help to facilitate conversation around how to address other deficiencies regarding coordination and leadership (Shuffler, DiazGranados, & Salas, 2011). At the interteam level, identifying the degree of profile alignment for interdependent component teams can serve as another, more refined layer for interventions. This interteam focus on profile alignment is particularly important, as it can help reduce the need for all teams to be involved in an intervention, instead targeting only those who need to be involved to improve interteam decrements. Furthermore, these interventions may serve to complement system-wide design features (e.g., leadership structures) that may be proactively implemented to guide system functioning early on (DeChurch, et al., 2011).

As profiles help to recognize the most common/likely groupings of constructs, this can help to balance the intervention selection process beyond having to craft specific interventions to each and every team, and providing generic training that is too broad. Overall, when these intrateam and interteam-targeted interventions are selected in alignment with needs identified via intrateam state profiles, they will be more successful than generic interventions that are useful to MTSs but not necessarily tailored to the specific, profile identified needs. Further, if interventions are misaligned, whereby they are addressing the wrong target at the intrateam, interteam, or system level, may result not only in a lack of improvement but even a decrement in performance. For example, interventions aimed at improving component team identities when there is actually a lack of a system-level identity may not only strengthen the component team identities but reduce the likelihood of a system-level identity ever emerging (Connaughton, Williams, & Shuffler, 2012). Thus, we propose that this approach of utilizing profiles has enormous potential for more efficiently identifying and matching interventions to MTS needs.

Proposition 4. MTSs that receive interventions derived from intrateam state profiles of their component teams will see greater improvements than MTSs who receive generic interventions.

Proposition 5. MTSs that receive interventions misaligned with their intrateam state profile needs will see no improvement or declines in performance in comparison to MTSs that receive generic or no intervention.

5. Discussion and concluding remarks

Overall, a team-centric approach to MTSs has the potential to greatly expand our current knowledge of their complexities. We have particularly attended to one such application, in utilizing profiles to better understand the patterns of intrateam emergent properties and their impact on interteam outcomes. We further provide guidance regarding some of the additional, overarching practical implications and future research needs for applying this team-centric view to MTS contexts. We conclude with a note of caution regarding the need to approach the study and practice of profiles in MTSs with an evidence-based, scientifically derived lens.

5.1. Practical implications

In organizations today the use of profiles has already begun, such as with personality profiles, strength finding tools, and team profiling for composition and task divisions (Fitzpatrick & Askin, 2005; Mathieu et al., 2014). However, many of these profile tools at the team level are based more on pop psychology than actual good practices. Accordingly, a scientifically derived, team-centric approach applied to MTSs via intrateam state profiles affords an opportunity for better selection of evidence-based HRM strategies in terms of creating and managing MTSs. We have previously presented propositions and their associated implications that tap into the practical contributions of such a view; however, we wish to emphasize the importance of some particular aspects of intrateam state profiles.

First, from an HRM perspective, understanding the profiles of teams within MTSs can support—and help the teams be supported by—optimal work system and design practices. A profile offers a holistic snapshot of overall component team functioning, meaning that organizations and leaders can more readily identify the specific developmental needs, making it possible to provide better-tailored interventions that match the appropriate level of analysis. This can be particularly beneficial when resources are tight, since instead of intervening with the entire system, it is easier to determine the specific resources that the component team actually needs. Additionally, immediate and targeted changes can be made by providing leaders with feedback regarding the current profile of their teams, in order to help them identify the specific social or task support that their team may need as a function of their current profile. This may be particularly valuable for better addressing MTSs that operate in multiple organizations, such as in our cancer care example.

Furthermore, inherent in the argument that MTSs change over time, the team-centric approach can be instrumental in anticipating and directing team and MTS performance over time with appropriate HRM practices. For example, profiles of component

teams can be monitored over time alongside situational events or triggers to allow for better informed prediction in terms of how a team or the MTS overall might react to a turbulent or sudden change. This type of tracking can help organizations anticipate what might lead to alignments or misalignments in relation to change catch problems before they emerge, adjust accordingly, and provide feedback and resources that will help them in similar, future situations. Finally, as our technology advances, we can also advance HRM practices by providing teams and systems with close to or actual real time profile updates. This may be particularly useful for virtual MTSs, where reduced face-to-face time may mean that component teams have a harder time recognizing when they are or aren't aligned, as well as how and when to reach out to other teams to help support one another (Keyton, Ford, & Smith, 2012). Overall, as we build our science behind a team-centric lens to understanding MTS and component team emergent properties, we can provide better HRM resources that can advance better MTS functioning.

5.2. Future research directions

One of the major goals of our current effort has been to demonstrate the use of a team-centric approach as a means to advance MTS research, specifically in the context of understanding the complexities of intrateam emergent properties. In so doing, we have highlighted several future research areas and propositions within the dynamic model presented. Therefore, the following future research directions address a broader set of considerations in terms of how a team-centric lens may advance MTS research as a whole.

5.2.1. Leverage extant MTS theories–at different levels of analysis–to derive meaningful profiles

First, future research should address the idea that for MTSs, profiles may be possible in varying levels of analysis and content. For content, examining affective/behavioral/cognitive/motivational profiles is just the start of what meaningful combinations might exist. We encourage researchers to more deeply explore what combinations of constructs may be appropriate to study from this team-centric lens, and to also consider what level of analysis (e.g., individual, dyads, team, system) might reveal unique and novel insights based on the research questions to be explored. For instance, both the Zaccaro et al. (2012) and Luciano et al. (2015) frameworks could be leveraged to serve as a rich starting point for understanding what aspects of these different typologies may be useful in identifying meaningful patterns of system-level attributes that exist in the real world.

Alternatively, at the component team level, utilizing team level theories to deduce what profiles may emerge for a given set of team constructs may serve as a starting point for their exploration in MTSs. For example, starting with the profiles of team conflict identified by O'Neill et al. (2015) could be another, more specific way to explore one aspect of intrateam state profiles—that is, do the same profiles replicate for component teams in MTSs and if so, how do the different profiles interact to predict interteam and system outcomes? Further, how might conflict management strategies be applied to the MTS context when different teams have different profiles? These types of questions, presently being explored at the team level (e.g., O'Neill et al., 2017), may take on new meaning in the MTS context. As such, we encourage further research that can merge traditionally variable-centric views with a team-centric lens to better depict MTS and component team complexities.

5.2.2. Use profiles to explore the role of temporal dynamics more thoroughly

Given the numerous calls for more temporally driven research regarding teams (e.g., Cronin, Weingart, & Todorova, 2011; Kozlowski & Klein, 2001), a team-centric approach not only aids in identifying profiles, it can also help to identify how component teams and/or their systems may shift or change in their profiles as a function of time. When teams are put into “types,” (e.g., Sundstrom, DeMeuse, & Futrell), it can be difficult to remove the static mindset that comes with such types (e.g., this team is an action team and will therefore remain an action team for its entire lifespan). However, profiles help to clarify this issue by acting as a description of the patterns of the emergent properties of a team or MTS at a given point but that may change over time.

For instance, latent transition analysis (LTA) assesses the probability that a specific profile will change and shift to another at any given point of measurement (Muthén & Muthén, 2007). Such analyses can help researchers understand how specific variables of interest such as diversity or interdependence can influence the probability that a change in profiles will occur (Wang & Chan, 2011). Via the examination of changes in discrete status over time, LTA is thereby useful for examination of the how fast profiles change and if the changes are reversible or permanent (Wang & Hanges, 2011). These methods can be used to answer the call for research examining how MTSs change and develop over time (e.g. Klein & Kozlowski, 2000) and provide a more dynamic understanding as to how MTSs mature and the different processes driving their growth.

A similar method for examining the changes that MTSs experience over time is latent profile growth modeling (LPGM). Unlike LTA, which examines how profiles change over time, LPGM identifies groups with similar growth patterns (Wang & Bodner, 2007). As such, this method would allow MTS researchers to better understand how component teams differ based on the interaction of multiple variables and the degree to which these differences would change over time. In doing so, LPGM provides researchers with information regarding whether or not the population being studied is homogeneous or heterogeneous with regards to their patterns of change. Thus, profiles may serve as a way to better leverage a classification system while simultaneously acknowledging the role that shifting dynamics play in adjusting the roles that teams engage in or the profiles they exhibit. Further, combining these approaches necessitates that researchers consider not only the intrateam emergent properties of interest but also how to operationalize and assess time.

5.2.3. Utilize existing archival data to explore a team-centric approach

A final yet very important research direction lies in the fact that the development of team-centric profiles does not require any different methodology or data collection approaches than are already in existence. As previously discussed, one of the biggest

challenges to studying MTSs is actually obtaining the data (Burke, 2014). However, given that surveys, observations, network, and unobtrusive data can all be leveraged to create profiles, this provides numerous opportunities for researchers to review archival MTS data sources and extract profiles. Thus, another potential first step in the team-centric direction may simply be the exploratory development of profiles from extant data sources. By revisiting these data, researchers can adapt old theories or even ground new theories in context-specific research to hypothesize what variables will exhibit complex interactions. The emergence of specific profiles can then be compared across contexts (e.g., profiles unique to healthcare, military, space exploration) to determine if certain profiles are context dependent. Further, this can help to ensure that the existence of profiles are not inappropriately assumed and applied in non-relevant contexts.

5.3. Conclusion

Overall, there is much potential for beginning to explore MTS complexities through a team-centric lens. By better identifying what is really going on in "real world" MTSs, we can better specify our theories for MTSs. This can, in turn, lead to more advanced interventions and tools that may not only be generally useful to MTSs but can be crafted to meet the needs of specific subsets of MTSs needing particular support. It also can conserve resources by eliminating the need to create a unique intervention or set of tools for every single MTS.

However, it is important to note that researchers utilizing team-centric approaches do not necessarily argue that these approaches are 'better' than variable-centered approaches. Instead, these approaches complement one another. Laursen and Hoff (2006) liken this to the comparison of binoculars to magnifying glasses, such that variable-centered approaches can serve as binoculars that help identify what is going on for a given context and associated variables. Team-centered approaches can then be used like a magnifying glass to provide a more fine-grained perspective as to what exactly is going on and how these variables specifically relate to one another to detect more nuanced patterns and their meaning for subsets of individuals. Accordingly, we recommend that team-centric profile approaches should be used in conjunction with more traditional approaches to further research by extending our current resources, allowing for a more fine-grained interpretation of MTS complexities within specific contexts. In following this path, a team-centric lens will serve to more effectively shape our knowledge and practice of MTSs in the 21st century and beyond.

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