Teams in Time and Space: Capturing the Dynamic Nature of Team Process through a Bibliometric Investigation

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Résumé :

Capturer la nature dynamique des processus d'équipe demeure à ce jour l'un des défis majeurs de la recherche. Pour éclairer cette question, nous revenons aux sources théoriques originelles des processus d'équipe, afin de retracer leur évolution à travers les courants de recherche récents. Cela nous permet de mettre en lumière les obstacles à la compréhension de leur dynamique, ainsi que les nouvelles pistes ouvertes pour les surmonter. En combinant une approche bibliométrique avec la théorie enracinée, nous cartographions trois écoles de pensée classiques à partir du regroupement des co-citations récurrentes, et analysons leurs axes transversaux : temporalité, multidimensionnalité, et triade cognition – affect – comportement. Nous explorons ensuite l'évolution de ces axes à travers l'analyse des couplages bibliographiques de recherches récentes, identifiant de nouveaux leviers comme la diversité, le leadership ou l'impact de circonstances extrêmes, qui enrichissent notre compréhension des processus d'équipe. Enfin, nous mettons en évidence de nouvelles approches méthodologiques transversales offrant des perspectives prometteuses pour de futures découvertes.

Mots-clés : Processus d'équipe, temporalité, multidimensionnalité, leadership

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1. INTRODUCTION

Science of teams has achieved a certain degree of maturity (Kozlowski, 2018) and is going through one of its most exciting moments (Ramos-Villagrasa *et al.*, 2017). However, some gaps still blur our understanding of how teams change over time to reach performance. While it is commonly understood that team constructs and phenomena are not static (Kozlowski & Bell, 2003), literature proves this dynamism is hard to grasp. Reasons are multiple. First, there is an ongoing request for more empirical testing. Team development is a "topic for which there [is] much theory and little data" (Kozlowski, 2018) and more analysis is needed on "work teams in their natural contexts at multiple points in time" (Sundstrom *et al.*, 1990). Several authors stress this request for more empirical examination (Mathieu *et al.*, 2000; Zhang *et al.*, 2021; Käosaar *et al.*, 2021), and testing classical models in real environments (Mathieu *et al.*, 2020; Ito & Brotheridge, 2008).

A second limit hampering our knowledge on dynamic team processes is the understanding of temporality. Gersick (1988) already emphasized that change over time is a key criterion to understand what makes groups work effectively, claim repeatedly voiced after (Cohen & Baily, 1997; Gully *et al.*, 2000; Jehn *et al.* 2001; Kozlowski & Bell, 2003). More longitudinal studies have been demanded (Gully *et al.*, 2002) and Klonek (2024) recently mentioned how the unfolding of team processes over time is still underdeveloped in existing research.

Finally, a third challenge affects the understanding of team processes: multidimensionality. Cohen & Baily (1997) state that "studying groups in context means taking seriously the notion of systemic levels in organizations" and Lemieux-Charles & McGuire (2006) the importance of understanding the "mutually reinforcing relationships between levels". Gardner *et al*. (2012) invite researchers to explicitly model the feedback loops within a team for a more nuanced and impactful theory, while Shawn *et al*. (2008) evoke the "organic nature of complex problem-solving is consistent with the web of connections in a high-performance team", stressing their "whole-of-sytems orientation".

Building on these gaps, and after sharing a succinct literature review, we will revisit the theoretical foundations of team processes and will analyse how these have evolved over recent research streams, leveraging a bibliometric analysis based on the tool ARTIREV, to offer new avenues for subsequent research.

2. CONCEPTUAL FRAMEWORK

2.1 TEAMS DEFINED: AN INHERENTLY DYNAMIC CONSTRUCT

The concept of "team" has been extensively described. Salas *et al.* (1992) defined teams as "a set of two or more individuals interacting adaptively, interdependently and dynamically towards a common valued goal". Proehl (1996) posits interdependence, personal interaction and mutual influence among its key traits and Van den Bossche *et al. (*2006) that rich interaction, interactive discussion, and negotiation are natural levers in teams to solve problems. Social relationships, change and exchange, evoked in these definitions, underline the dynamic element in teams.

Perception and self-perception are also key: team members need to see themselves and be seen by others as such, setting the organizational boundaries that will make them recognizable as an "intact social entity" (Cohen & Bailey, 1997). Perception points us towards cognition, since it

addresses how team members and those surrounding them decode their experience of the team. On that same cognitive thread, shared mental models also define teams (Salas *et al.*, 2000) and to nurture this common understanding, team members must ensure the dynamic exchange of information and resources, to face the challenges of a complex environment.

But if teams perceive, exchange and interact, it's for the sake of delivering a certain outcome: performing organizational relevant tasks necessarily unites team members in a joint endeavour, (Kozlowski & Bell, 2003). The cognitive and social layers are thus complemented by a behavioural one. The intention of the team becomes action through their activities, defining the team also through delivery.

Teams are thus "a collection of individuals who are interdependent in their tasks, who share responsibility for outcomes, who see themselves and who are seen by others as an intact social entity embedded in one or more larger social systems […], and who manage their relationships across organizational boundaries" (Cohen & Bailey, 1997, p. 241). The fact of belonging to or interacting with given units in the organization or wider system makes the team a multidimensional construct, deploying another dynamic facet.

2.2 TEAM PROCESS DEFINITION: "TOO HARD TO HANDLE"

If the different definitions of team encapsulate dynamic traits, trying to define team processes and its dynamic nature becomes a more challenging task. Mc Grath (1984) describes team processes as patterned relations among team members, and Cohen & Baily (1997) as interactions like "communication and conflict that occur among group members and external others". But the lack of consistency between definitions makes it difficult for researchers to have clear guidance (Marks *et al.*, 2001) and the search for a single overarching framework should probably give in to multiple models tailored to specific team types and work processes (Lemieux & MacGuire, 2006).

The Input – Process – Outcome (IPO) framework, fathered by McGrath (1964) to study team effectiveness, remains iconic in the field though. Positing "group phenomena as a recurrent cycle of 'input, process and output', in which the output, or results, in one point of time, alters the input conditions for the next period of time", it implicitly evoked the cyclical nature of team process, that Hackman (1987) would later capture in a 3-step sequential visual, enhancing the IPO flow in a way that would to some extent fade McGrath's dynamic intention.

On the other hand, Marks *et al.* (2001) stress how the transformation of inputs into outcomes by interdependent team members happens "through cognitive, verbal, and behavioural activities directed toward organizing taskwork to achieve collective goals", and Hans *et al.* (2018) note that the behavioural, affective/motivational and cognitive components of teams' processes are necessary to grasp the complexity and dynamic of teams. If behaviour is particularly linked to joint effort, the affective/motivational layer drives the effort towards a common goal, while the cognitive layer facilitates knowledge sharing, in a triad mirroring the one also found in the definitions of team.

2.3 Team Performance Definition: A Shapeshifting Concept

Finally, we also consider relevant to look at the definitions of team performance. If the process enables teams to achieve a goal -tangible or intangible- or to perform a specific outcome, outlining what team performance is can help us better grasp team process. There are multiple definitions, and they have already deserved at least one taxonomy to our knowledge (Fleishman *et al*., 1992). Simply trying to differentiate 'performance' from 'effectiveness' would deserve a systematic literature review. Performance refers to carrying out the activities necessary to deliver a certain task, whereas effectiveness alludes to the appraisal of the outcomes (Salas *et al.*, 2008), but effectiveness has become increasingly complex and difficult to capture, as it may also refer to creativity or customer satisfaction, among others (Mathieu *et al.*, 2008).

Literature offers multiple definitions of team performance. Some, in search of objectivity, bet on measurable data linked to economic results (Yeatts & Hyten, 1998) or create custom ratings for performance (Lippert & Dulewicz, 2017; Johnsen *et al*., 2017; Cheng & Gong, 2018; Byrne & Eddy, 2022). While tangible, these measures give a contextual definition for performance, making it difficult to generalise. Acknowledging this, other authors prefer to recognize that performance can be subjective and build their measurements based on employees' assessment (Kamolsiri *et al.*, 2018; White-Williams & Shirey, 2022). Finally, others, like Mathieu *et al.* (2008), aim at integrating both perspectives through blended composite measures, encouraging researchers to develop more generalizable approaches addressing multilevel effects.

3. METHODOLOGY: THE BIBGT METHOD

3.1 PRINCIPLES OF BIBLIOMETRICS AND STUDY OBJECTIVES

3.1 Principles of Bibliometrics and Study Objectives

Initiated in the early 21st century, bibliometrics has become a recognized method in the social sciences and in the field of management sciences since the foundational work of De Solla Price (1965). Bibliometrics is defined as "the application of mathematics and statistical methods to books, articles, and other communication media" (Pritchard, 1969). This method is based on a set of quantitative techniques aimed at studying a large sample of scientific documents based on cited bibliographic references (De Solla Price, 1965). Conducting a bibliometric study enables the understanding of the structure of a disciplinary field, while highlighting the evolution of research and emerging research trends. Bibliometrics uses quantitative analysis techniques such as clustering and mapping to categorize, classify, and quantify knowledge in a specific disciplinary field (Walsh & Renaud, 2017). This representation of a research corpus allows researchers to identify recurring citation patterns, observe and assess the evolution of the research field and its associated subfields, thus shedding light on theoretical pillars,

identifying key concepts, and modeling theoretical frameworks in a particular research area (Zupic & Čater, 2015).

3.2 The BIBGT Method

The BIBGT method, an acronym for the combination of bibliometrics and grounded theory, relies on the integration of these two methodologies to conduct a literature review (Walsh & Rowe, 2023). This method is structured around four key steps: (1) defining boundaries; (2) processing bibliographic data; (3) clustering, mapping, and interpreting; (4) synthesizing. We will present the first three steps below and the fourth one in the Results section.

Step 1. Defining boundaries

The primary objective of this literature review is to determine the theoretical pillars of the concept of team process and to identify current research trends related to this concept. We conducted the study over the period from 1965 to 2024, identifying a total of 122 documents from the Scopus database, which was interfaced using an API developed by the ARTIREV software employed during the analysis (Walsh et al., 2023). There are numerous bibliometric techniques based on statistics that allow for the quick identification and ranking of articles with an impact on the literature (Zupic & Čater, 2015). Following the recommendations of the BIBGT method, we chose to use two bibliometric techniques.

Co-citation Analysis (CCA):

First, we conducted a co-citation analysis of references (CCA). This technique allows for a retrospective analysis of a specific field to identify theoretical pillars—the most important authors, works, theories, and methodologies in each domain (Walsh & Renaud, 2017). Co-citation analysis enables the study of both the intellectual core of a research set and its "invisible

colleges" (Crane, 1972; De Solla Price, 1965; Noma, 1984), which are groups of regularly co-cited documents belonging to the same research tradition.

Bibliographic Coupling Analysis (BCA):

Developed by Kessler (1963), bibliographic coupling analysis (BCA) involves a comparative analysis of the references (or authors) cited in a corpus of documents. BCA assumes that if two documents cite the same literature, they cover the same research themes, perspectives, and positions. Consequently, a given body of literature can be divided into different groups that form the "research front" of that literature (Jarneving, 2001). Unlike CCA, which focuses on "past traditions," BCA concentrates on "current research trends" in which these traditions may be rooted. In the context of this study, this technique allowed us to examine the current research areas related to high-performing teams.

Step 2. Treating bibliographic data

To conduct the CCA and BCA analyses, we initiated our approach with the following query using the ARTIREV software: TITLE-ABS-KEY ("TEAM PROCESS"). This search yielded 122 documents (scientific articles and books) containing the term in their title, abstract, or keywords.

In the second step, we cleaned the references using ARTIREV, which applies automatic thresholds based on sample size and a relevance index calculated from citation counts. A 5% threshold was set, meaning each article had to be cited by at least 5% of the corpus. This resulted in an intellectual core of 26 references.

For the BCA, we focused on publications from 2010 to 2025 to ensure consistency in citation patterns. We excluded general methodological articles (Baron, 1986; James et al., 1984, 1993; Podsakoff et al., 2003). The article by Marks et al. (2001), appearing in two schools of thought, was assigned to the second due to its shared non-linear perspective on time in team processes.

Chan's (1998) article, initially a single-article school, was integrated into the third cluster due to its focus on the multidimensionality of team processes.

After cleaning, the sample included 26 references for the CCA and 52 for the BCA. The data are presented in the Appendix.

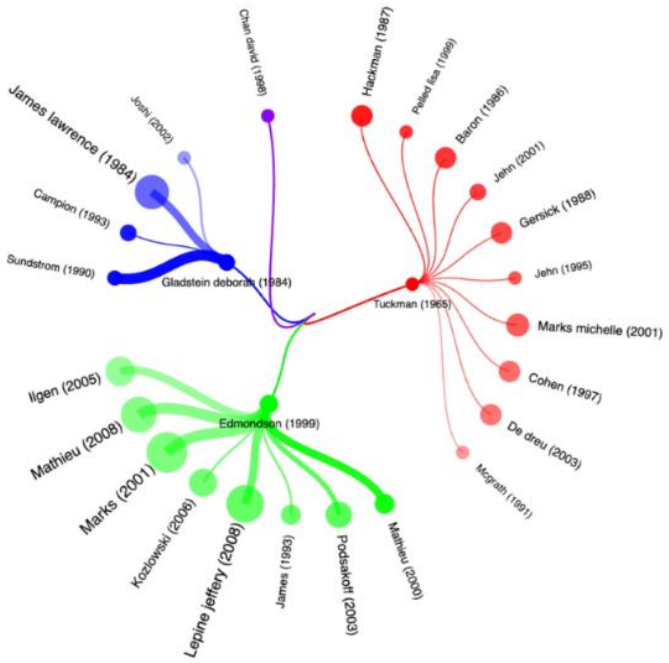
Step 3. Data Coding

The BIBGT method combines bibliometric analysis with grounded theory (Glaser & Strauss, 1967; Walsh et al., 2015), enhancing transparency in result interpretation. Following grounded theory, we applied open, selective, and theoretical coding. We began with a qualitative description of the groups, then conducted open coding of titles and abstracts to identify similarities and differences. The most cited articles were initially coded, followed by references within each cluster. Emerging concepts were grouped and named to construct meaning. Analysis continued until additional documents yielded no significant new insights.

4. RESULTS

We will now expose the synthesis of our study, identifying the key theoretical axes that structure each of the classical schools of thought offered by ARTIREV (the first one focused on a sequential view of time in team process and the importance of conflict; the second one, adopting a non-linear perspective and a multidimensional approach; and the third one, looking at space or the broader systemic perspective). Then, in the fourth section, we will address how recent research streams have evolved the previous axes (the role of conflict; performance assessment; and time and space in team processes) and developed additional ones (the link to leadership; insights on teams under extreme circumstances).

Figure 1: Co-citation Analysis Dendrogram generated by ARTIREV, where every school of thought represents a theoretical foundation



4.1 SCHOOL OF THOUGHT #1: TEAMS IN LINEAR TIME: LED BY SEQUENCE AND CONFLICT

4.1.1 A sequential view of team process

In his "Developmental sequence in small groups", Tuckman (1965) shaped a well-known four-stage process, describing how teams develop over time –the Forming, Storming, Norming and Performing stages, later completed by the Adjourning stage-. Hackman (1987) follows Tuckman's thread, positing that his model enables a "a reasonably good understanding of the patterns of group process that are typical of various kinds of groups", but offers a normative approach instead of a descriptive one, proposing a recommended sequence for team process: Stage 1 – prework; Stage 2 – creating performance conditions; Stage 3 – forming and building the team; and Stage 4 – Providing ongoing assistance. Gersick (1988), on the other hand, reinterprets sequentiality on her punctuated equilibrium model, describing how teams evolve

from a first period of evaluation to an enhanced period of task accomplishment, thanks to a leap in the midpoint entailing "revolutionary periods of quantum change".

If Gersick sees time team development as a rhythm, McGrath (1991) reshapes traditional phases into a fluid construct with four Modes (inception; problem solving; conflict resolution; and execution) that are "potential, not required, forms of activity". In this Time Interaction Process (TIP) model, he evolves the traditional sequential view without completely giving it up, as he expresses that "a default sequence that is a 'satisficing' or 'least effort' path" will prevail unless specific conditions demand a more complex solution. While team development doesn't have single-way path, it still is explained through blocks of time that can be dynamically experienced.

4.1.2 The role of conflict in the duality task activity - relationships

The second key idea in this school of thought is the role given to conflict in team development. If McGrath (1991) alludes to conflict resolution in his Mode III and Tuckman (1965) does it in the Storming phase, Hackman (1987) addresses the distinction between affective and performance reasons to conflict. Conflict is both a barrier and a catalyst for team development, functioning as a filter that the team must navigate to achieve its goals. With the aim to gain "more insight from broader patterns of interaction", Jehn *et al*. (2001) follow this thread and show how conflict is interwoven in the team transformation journey: low but increasing levels of process conflict, low levels of relationship conflict and moderate levels of task conflict at the midpoint characterize "teams performing well". Jehn (1995) also echoes Hackman (1987) when she analyses team conflict looking at groups that operate in organizations, taking on his criterium for outcome evaluation. Her approach is also reminiscent of Tuckman's, when she states that conflict can be beneficial depending "on the type of conflict and the structure of the group in terms of task type, task interdependence, and group norms".

Cohen & Bailey (1997) gather some of Jehn's insights in their heuristic model of team effectiveness, particularly in the way they address conflict, the norms reflecting the acceptance of conflict and the beneficial impact of cognitive conflict, as opposed to the detrimental impact of affective conflict in teams, indirectly contributing to the distinction between group structure and task activity, that Tuckman set as a basic building block of team process. But if Cohen & Baily differentiate the impact of conflict depending on its type (cognitive or affective), De Dreu and Weingart (2003) challenge these views, showing the negative correlation between conflict (both interpersonal and task related) with team performance and team member satisfaction, particularly in highly complex environments. Pelled *et al.* (1999) also explore the relationship between conflict and performance, adding as a third variable the layer of diversity, but always within the dual frame of task conflict and emotional conflict.

This first school of thought thus share a common sequential view of team development. With different accents, they all evoke time in team processes as an evolution over phases towards the achievement of a goal, with a key force, conflict, that serves as barrier and trigger, and the task or project as northern star, while the interpersonal relationships are the stream that pushes development forward.

4.2 School of thought #2: Teams in Nonlinear Time: A Multifactor Process

4.2.1 A nonlinear view of team process

The article by Marks's et al. (2001) is an important node in the cluster according to ARTIREV's graphic depiction. Noticing the "paucity of research on how teams integrate temporal processes into their functioning", these authors dig into temporality, resuming the IPO framework, but reshaping it through a cyclical lens. Because as stated by Mathieu *et al*. (2008): "time plays a critical role in team functioning [and it] is not adequately depicted in typical unidirectional I→P→O frameworks".

Still driving their attention to "how time relates to goal attainment", Marks *et al*. overcome the approach based on "phases of a team life cycle or development", to highlight team process through a series of temporal cycles of goal-directed activity, called episodes, where "performance is accrued, and feedback is available". Ilgen *et al*. (2005) also withdraw from the traditional IPO sequence, to stress its cyclical nature and unpredictability. When they reframe their model as "Input Mediator Output Input", they explicit the "notion of cyclical causal feedback" by adding the last 'Input' and they eliminate the hyphen between letters signifying that "the causal linkages may not be linear or additive, but rather nonlinear or conditional". Similarly, Mathieu *et al*. (2008) replace the P of "process" by the M of "mediator", in the framework Input Mediators Outcome (IMO), where mediators entail both processes and emergent states. They reinforce that "teams must execute different processes at different times, depending on task demands that recur in a cyclical fashion" and emphasize the distinction between the developmental and episodic approaches, urging researchers to ascribe to one of them. The temporal quality takes in this school a new shape, as the interactions driving a team towards their goals are no longer linear or *finish* in a specific phase.

4.2.2 A sharpened focus on process

If in the first school of thought, the duality between task activity and interpersonal relationships was structuring, from the early 2000s, "more attention was paid to mediating processes that explain why certain inputs affect team effectiveness and viability" (Ilgen *et al*., 2005), therefore lightening the initial focus on inputs.

Mathieu *et al*. (2008) adopt the three-dimensional framework by Marks *et al*. (2001), based on transition phases, action phases, and interpersonal process, to enrich it with a series of constructs considered either "emergent states" (like team confidence, team empowerment, climate or safety climate); or "blended mediators" (as behavioural integration and transactive

memory systems). Lepine *et al.* (2008) offer another take on Marks *et al.* (2001) when, in their meta-analysis, they identify ten narrow teamwork activities, that build into the 3 higher-order dimensions (transition process, action process and interpersonal process), which in turn reflect "an even more general omnibus teamwork process dimension", only to find that "teamwork processes were positively associated with team performance and member satisfaction".

4.2.3 The importance of the triad cognition – affect – behaviour

The second school also evolves the duality task activity – relationships by adopting a wider view on cognition, affect and behaviour. As highlighted by Ilgen *et al*. (2005), the efforts to study these three levers in team processes, have been "somewhat fragmented and noncumulative due to a proliferation of constructs with indistinct boundaries". Edmondson (1999) for example focuses on the importance of cognitive and interpersonal factors to explain team effectiveness, highlighting the gap in theory around the role of beliefs about the interpersonal context and their effects on team outcomes, while Mathieu *et al*. (2000) also explore cognition in the shared-team- and task-based mental models, to find their positive relationship with performance. As Edmondson, they zoom in into specific constructs populating an increasingly richer IPO landscape.

Widening these lens, Marks *et al*. (2001) stress how the transformation of inputs into outcomes by interdependent team members happens "through cognitive, verbal, and behavioural activities directed toward organizing taskwork to achieve collective goals", a triple focus also supported by Ilgen *et al*. (2005). Finally, Kozlowski & Ilgen (2006) also underscore the "coordinated process that combines their cognitive, motivational/affective, and behavioural resource" led by teams to respond to task demands.

As we have seen, this second school of thought supports a non-linear and cyclical experience of time, enhancing the dynamism of team process, deepening into process itself and the triad affect – cognition – behaviour, to overcome the duality 'task activity – interpersonal process'.

4.3 School of thought #3. Teams in Space

4.3.1 The Challenges of Multidimensionality

The challenge of simultaneously addressing different levels of analysis when studying team development deploys in multiple ways. Gully *et al.* (2002) point out how "research on individual performance is a potential source of theory regarding determinants of team effectiveness" but stresses that "team-efficacy has been defined and measured at both individual and collective levels, potentially creating problems with levels of analysis". Similarly, Campion *et al.* (1993) highlight the difficulty of integrating the individual and collective layers: when researching specific team constructs, since "most of what is known […] has been from research at the individual level" and "it is uncertain how well the findings generalize to the group level". A different nuance is offered by Gladstein (1984) when evoking the complex interplay between the individual and group dimensions and particularly how "the variables shown to influence self-reported effectiveness read like a textbook on team building": participants in her study seem to share a preconceived understanding of the drivers of team effectiveness, so that when they spot behaviours associated with them, they automatically assert that the team is effective. The implicit models they hold reify a group construct (team effectiveness) based on their individual beliefs, rather than on actual collective scores.

Chan's (1998) typology of composition models relieves this challenge, putting forward that "the organizational phenomenon under investigation often is inherently multilevel as opposed to occurring at a single level or in a level vacuum". His framework enables a multilevel approach and guides the development and validation of new constructs, by offering a detailed

explanation of the different alternatives to do it: additive models, direct consensus models, referent-shift consensus model, dispersion models and process models.

4.3.2 The Role of Context

In Gladstein's approach (1984), we come across another relevant axe: context and the role of boundaries. Among the exogeneous variables, she includes rewards, training, supervision, skills, mix, job tenure, organizational tenure, market growth, and size, and states that "their impact might be determined more clearly by looking at each measure individually", which undermines however their explanatory power, as the "understanding of the relationships among the endogenous and exogenous constructs" gets diluted. Her views are echoed by Campion *et al. (*1993), when they refer to the team's context and count adequate training, managerial support and communication and cooperation between groups as its pillars. Both authors look at what happens *outside the team* and in doing so, tackle a key concept: group boundaries. Managing them can enhance team effectiveness: either through their supervision or the integration with the rest of the organization (Campion *et al.,* 1993), or as a way to improve information-processing (Gladstein, 1984). Boundaries "define how a group needs to operate within its context to be effective" (Sundstrom *et al.,* 1990) and teams "need to manage their boundaries and adapt to their organizational environment" (Gladstein, 1984).

4.3.3 The Ecological Approach

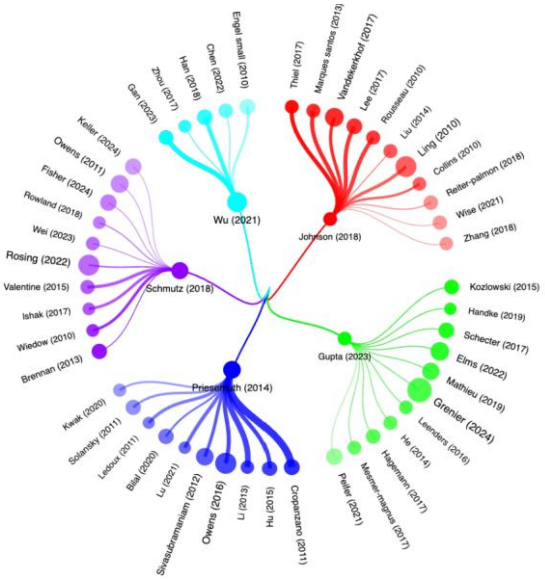
Sundstrom *et al.* (1990) stress this perspective with their model of work team effectiveness, crafting it as "dynamically interrelated with organizational context, boundaries, and team development". Suggesting that the interplay between internal processes and external surroundings gives a privileged view to understanding team effectiveness, he adopts an ecological approach, where boundaries both separate and link the team from its context. In his framework, "teams change and develop new ways of operating as they adapt to their contexts".

Even when considering the structural elements, like norms or roles, Sundstrom *et al.* assert that the aspects characterizing a group are hardly stable, which drives him to propose a flexible model, prioritizing dynamism and where circular symbols underline the reciprocal interdependence between context, boundaries, team development and team effectiveness. This approach connects with Gladstein's (1984), when she summons open system theorists and authors studying boundary spanners, who address the interdependence between organizations and their environments and the need for their subunits to coordinate. Indeed, these approaches share a dynamic view of a larger system, where teams are set within a broader context and where they need to interact with external agents, maintaining a delicate balance between coordination and differentiation, between synchronisation and independence.

These articles have thus shown the struggle of playing with the multidimensional measures of team processes and the key role of context, unfolding their dynamism *across space.*

4.4 Recent research streams: New Solutions to apprehend team process dynamism

Figure 2: Bibliographic Coupling Analysis Dendrogram generated by ARTIREV, showing the most impactful research themes generated during the last fifteen years:



4.4.1 First research stream: conflict, revisited; and team assessment beyond effectiveness

This first research stream adds more colour to traditional views of conflict as a force within team processes. Perspectives on task-conflict and relationship-conflict are complemented by a new focus on role-conflict, proven to negatively affect team performance due to its impact on cognitive and motivational processes (Johson *et al.,* 2018). Role-conflict would thus be an emergent state entailing "team members' emotions and cognitions about role expectations and [varying] 'as a function of team context, inputs, processes, and outcomes'", which offers a new way to integrate traditionally distinct levers – cognition and affect – and enhances a contingency driven perspective, also supported by Rousseau & Aubé (2010).

The analysis of Team Mental Models also advances the classical duality task-relationship, showing that "task-Team Mental Models lead to performance, while team-Team Mental Models lead to performance through team processes" (Marques Santos & Margarida Passos, 2013). Also unravelling the cognitive thread, Reiter-Palmon & Murugavel (2018) chose to focus on how teams engage in collective problem construction, only to find that teams doing it generate more original ideas, higher satisfaction and lower conflict, evidencing that when conflict is not solved, "creativity suffers".

A new lever comes to enrich the link between conflict and team process: diversity. Setting effective conflict management processes enables "functionally diverse teams [to] reap the rewards of being functionally diverse" (Johnson *et al.*, 2018) or put it differently: "in order to benefit from diversity, a firm must be able to exploit it" (Ling & Kellermanns, 2010). Top Management Teams (TMTs) thus need internal processes to effectively manage large amounts of information and decision-making ambiguity (Ling & Kellermanns, 2010), while the polarization of opposing positions driven by Socio-Emotional Wealth separation in TMTs "will negatively affect the level of behavioural integration, and subsequently TMT decision-making

quality" (Vandekerkhof *et al.*, 2018). Diversity can thus be beneficial, as long as mechanisms for conflict management are set in place.

Finally, this first research stream also opens new routes to assess team effectiveness as a result of team process. Rousseau & Aubé (2010) posit two additional criteria beyond performance: team viability and team process improvement. Marques Santos & Margarida Passos (2013) state that performance is not sufficient to analyse team effectiveness and suggests to also focus on satisfaction, well-being of team members and their willingness to work together. Finally, Collins & Parker (2010) adopt a longer-term view when enhancing the concept of "organizational citizenship behaviour", that evokes how team members go the extra mile to promote the effective functioning of the organization, instead of focusing solely on what's individually expected of them.

4.4.2. Second research stream: shedding new light on time and space in team process

If time in team processes was traditionally apprehended through sequential, cyclical, non-linear or episodic processes, this second research stream goes further in deconstructing temporality. Schechter *et al.* (2017) still complain about how research has considered team emergent phenomena as "static characteristics of the group", ignoring their dynamic nature over time, while Kozlowski (2015) underscores "the variability, trajectories, and cyclical fluctuation" of team processes, asserting that the IPO model "was not intended to 'freeze' processes into a mediating box—although that is what has happened". From a different angle, Leenders *et al.* (2016) challenge traditional theoretical approaches that consider the entire team as an aggregate changing equally over time and points out how this homogeneity "severely limits our opportunity to develop and test time-dependent theories".

Some interesting constructs have emerged to address these barriers. For example, relational events refer to "every single interaction between any two or more team members at any time

(e.g., sending an email message, talking at the water fountain, asking someone for guidance, [or] providing social support)" (Leenders *et al.*, 2016). Zooming into these aspects enables a different framing of temporality in continuous, rather than at multiple discrete time points, focusing on what Leenders *et al.* (2016) calls Sequential Structural Signatures – a means to "articulate the underlying theoretical mechanism through which team interactions unfold" –. Schechter *et al.* (2017) also study relational events, seeing them as evolutionary, and suggesting the analysis of work styles through the lenses of their temporal patterning, since employees can have different paces of work or perceptions of urgency. He thus opposes "relational events" to "relational states" to enhance the dynamism of the former. Peifer *et al.* (2021) propose another interesting construct: team flow, "a shared experience of flow, characterized by the pleasant feeling of absorption in an optimally challenging activity […] and of optimal team-interaction during an interdependent task". A field to be further investigated and needing behavioural indicators that, unlike self-report questionnaires, won't interrupt the process they aim to measure (which artificial intelligence and wearable sensors could enable).

But if team processes happen over time, they also unfold across space, either physical or virtual. Several authors focus on the later. Gupta *et al.* (2024) study the impact of virtuality on performance, discovering its negative influence, probably due to the communication barriers it can entail, but pointing out its positive impact on conflict management, thanks to greater anonymity for team members and more formal communication protocols. Peifer *et al*. (2021) also assert the positive influence of virtuality, this time on individuals' team satisfaction, given the opportunity to work with "diverse team members, regardless of geographical location" and how team flow can act as an antecedent of trust in virtual environments.

Media use in these new hybrid settings becomes also a topic worthy of study, as it is "one of the primary virtuality dimensions […] without temporal or spatial restrictions imposed on the members by anyone else but themselves" (Handke *et al.*, 2019). The usage of lean media (i.e.,

telephone, chat) increases over time in the development of a project, since employees "perceive(d) leaner media as facilitating, rather than hindering, their coordination demands, and as saving them the time they would have had to invest in scheduling and attending face-to-face meetings" (Handke *et al.*, 2019). The analysis of new spaces, like virtuality and their associated levers, thus offers significant advancements for the understanding of team processes.

4.4.3 Third research stream: a new focus on leadership

The third and fifth research streams suggested by ARTIREV (here merged due to their commonalities) propose a new key to unravel team processes: leadership, an aspect somewhat overlooked by traditional schools of thought. New characteristics and styles of leadership are considered. Leader humility is evoked, as it influences team effectiveness "through contagion of the behaviours themselves, shaping specific teamwork and regulatory-focus aspects of team functioning" and fostering an empowering climate and supportive organizational contexts (Owens, 2016). Servant leadership style, on the other hand, acts "as an antecedent to team goal clarity and team process clarity, which subsequently increase team outcomes" (Bilal *et al.*, 2021). Transformational leadership also influences team performance by fostering cognition-based trust and team potency (Owens, 2016) and becomes an input in the model developed by Lu & Li (2021), based on and enriching the IMO approach with new multilevel and cross-level effects.

The relationship between shared leadership and team processes deserves a great deal of attention in recent research. Engel & Rentsch (2010) define shared leadership as "an emergent process of mutual influence, in which team members share in performing the leadership functions of the team (p. 204)", positively influencing team performance. Han's perspective (2018) is more nuanced, as they don't find a significant and strong direct relationship between shared leadership and team performance but still acknowledge how team members sharing their

leadership enables a stronger focus on goals and creates a cohesive atmosphere that positively increases team performance through collective learning. Similarly, Chen *et al.* (2022) find that team trust and team learning behaviour mediate the positive influence of shared leadership on team performance. Finally, Wu & Cormican (2021) highlight that "shared leadership is not a static, but a transferable and quite a fluid process" and note its positive influence on team effectiveness in design teams, with the stage of the project life cycle as a moderating force.

This research stream also finds interesting nuances underpinning the topic of leadership and team processes: the distribution of authority and the identification in teams. Solansky (2011) posits that identification is key to teamwork because "people's level of cooperation with groups is primarily shaped by the extent to which they identify with those groups" and connects it to higher motivation, job satisfaction, more compliance, and reduced conflict. Cropanzano & Benson (2011), for their part, create a teamwork process model of peer justice, defined as "a shared perception regarding how individuals who work together within the same unit and who do not have formal authority over each other judge the fairness with which they treat one another", stating how this judgment favours communication, coordination and mutual support, promoting "higher team performance and unit-level citizenship behaviours".

4.4.4. Fourth research stream: teams under extreme conditions

The fourth research stream pays special attention to teams operating under extreme circumstances, to reveal how some key constructs related to team processes stand out in critical situations. Schmutz *et al.* (2018) highlight how team reflexivity is "especially important for action teams in extreme and dynamic environments because [it] fosters the processing of new information during the performance event, thus enabling adaptation" and stress the importance of capturing the early warning signs of crisis, particularly in uncertain, complex and ambiguous

environments. Wiedow & Konradt (2010) analyse reflection and adaptation in critical teams, to find that team members in urgent situations first engage in spontaneous team adaptation, and then in a more systematic reflection process, which seems plausible even if not necessarily most efficient, opening the doors to future investigations on the reciprocal interaction between team reflection and team adaptation, and "the sequencing of team improvement processes".

Moving from team reflection to team learning processes, Keller *et al.* (2024) note the existing research gap when it comes to trainings for acute care teams and request a "more holistic, systemic approach, involving all team members, over a longer time frame to improve organizational and patient safety culture". They also point at the opportunity to gather real-time data from devices that continuously track team functioning indicators, to provide "real-time information about team performance and rapid warning signals in case of teamwork breakdown" and wonder how artificial intelligence will help evolve teamwork in medical care, requesting more research on the subject. Ishak & Williams (2017) add to this reflection by stressing how challenging learning from experience can be for firefighters, since they risk provoking major losses of finance, resources or human lives, if they adopt a trial-and-error approach during hazardous situations. This is where appropriating the experiences of their firefighter colleagues into their own bank of experiences becomes helpful, enabling organizational learning through a variety of activities, including communication.

Finally, another cognitive factor is analysed in this fourth research stream: the internal sense of time in critical situations. Whereas we might think of time in terms of an exogenous, fixed variable, Fisher *et al.* (2024) highlight its "temporal ambivalence", appealing to our subjective perception of it. If previous research focuses on "individual team members paying attention to and monitoring time", Fisher *et al.* insist on assessing whether "the team as a whole takes up opportunities to exhibit focused, collective engagement around time management". Time plays another interesting role for teams in critical situations, according to Rosing *et al.* (2022): the

preference of a certain leadership style, depending on the action phase the team experiences. Thus, in crisis situations, autocratic versus democratic leadership is preferred, as it "elevates trust in the leader during the action phase by increasing leader ability", whereas in transition phases, democratic leadership is chosen, elevating leader benevolence. This fourth research stream also enriches theory on team processes, as it addresses how cognition works under extreme circumstances, which can open enriching angles for broader knowledge on teams.

4.4.5 Transversal methodological innovations

In this final section, we want to focus on some transversal methodological aspects spanning these new research streams.

From a modelling perspective and focusing first on the variables that compose models, Leenders *et al.* (2016) invite researchers to analyse "the rhythm, pacing, speeding, and slowing of exchanges among team members as a function of team members' relational histories and preferences". When developing the model to capture the sequence of relational events, they suggest focussing on the rate of change: "the rate at which a single relational event from one particular team member to one or more other specific team members is likely to occur at any given instance of time, given any prior interaction", thus overcoming the classical causality approach, to better apprehend how teams transform over time. If we now now focus on the methodological devices leveraged to create some of the new models, Kozlowski (2015) claims the potential of computational modelling to understand team processes and offers six recommendations to study team process dynamics, while Engel & Rentsch (2010) resort to social network analysis to disentangle the relationship between shared leadership and team performance. Addressing similar challenges, Handke *et al.* (2019) bet on a radically different solution, embracing the narrative approach as an alternative to go beyond linear perspectives and to describe with greater freedom and depth "how communication – and specifically media

use – in project teams develops and changes". Kozlowski (2015) also insists on the importance of extensive descriptive research, either through qualitative or quantitative analysis, arguing that it will advance theoretical precision.

Finally, it's important to also point out the potential of technology to help advance team process measurement. Communication analysis leveraging video and audio recordings of teams as they engage in collaborative tasks is a powerful technique often used in other fields, that can be very valuable as long as it ensures construct-valid coding (Kozlowski, 2015). Gathering real-time data "from devices that continuously track team functioning indicators" (Keller *et al.*, 2024) can also prove to be extremely helpful in providing "real-time information about team performance and rapid warning signals in case of teamwork breakdown". And as noted before, artificial intelligence and wearable sensor technology offer promising grounds to capture team processes in a continuum (Peifer *et al.*, 2021).

5. DISCUSSION

Thanks to a BIBGT approach, we have synthesized a diverse and complex body of literature, evoking the dynamic nature of teams and how theory has approached it over time. We have identified three classical schools of thought that set the seeds for our understanding of team process, and we have pinpointed how contemporary research evolves and enriches their perspectives. We consider this paper offers at least three theoretical contributions: shedding new light on why theory struggles to capture dynamism in team processes; identifying new tools and methodologies to overcome these barriers; and gathering new key pillars in the construction of team process theories, to inspire future developments in the field.

As stressed by Kozlowski (2015), the IPO framework contributed to freezing the perception of team process, despite its original dynamic intention. If we go back to McGrath's original approach, we realise that it was anchored by literature in a much more static three-steps

sequence, probably favoured by Hackman's visual depiction. Capturing McGrath's framework in a diagram with three clear phases and a set of arrows enhancing sequentiality, Hackman created a visual evoking a finished process, because "a theory picture is closed by nature, in the sense that it represents a finished story" (Swedberg, 2016). Necessarily simpler than McGrath's original text, this diagram may have influenced subsequent research, since "in academic research, easy-to-process visuals are key to disseminating theories" (Rasolofoarison & Russell, 2023). While Hackman's heuristic depiction of the IPO helped to its diffusion, it may have also contributed to lightening its dynamic nature.

Nevertheless, recent research has found new ways to capture the dynamism of team processes, overcoming the notion of temporality as a phased homogeneous construct and putting the accent on a more personal experience of time as a continuum embodied in specific moments and means, through the lens of relational events. The construct of team flow also offers a noteworthy angle, where collective cognition sets the pace, and by focusing on temporal ambivalence, we address the subjective experience of time, opening a completely different take on temporality in team processes. If these views innovate in the apprehension of time, research also evolves how processes unfold across space and particularly in virtual or hybrid settings, delivering insights on how virtuality intertwines team processes and team effectiveness.

But if methodological innovations help us lighten the conundrum of dynamism in team process theories, technology also opens extremely promising doors. Research thus proposes to leverage artificial intelligence, sensor technology, real-time data gathering, or video and audio recording, to capture behavioural indicators without interrupting team process. Computational modelling and social network analysis also bring new solutions to capture team process dynamism.

Finally, we also bring to the table new advancements to research on team processes by looking at the evolution of classical drivers like conflict (through role-conflict or its relationship with team mental models); enhancing new pillars like diversity or leadership, particularly in some

of its newest forms (transformational, servant and shared leadership); and noting how new constructs, like organizational citizenship behaviour, can expand our views on team effectiveness, beyond the traditional focus on performance.

From a managerial perspective, we consider these contributions useful as they can lead managers to better tackle temporality in their own teams: whereas workflow is typically structured in sequential phases or cyclically at best, being aware of the nonlinear nature of time in team processes and its subjective experience can help envision new ways of working and tools. Secondly, understanding how virtual environments affect collective effectiveness can help hybrid and multimarket teams, increasingly present in companies nowadays, improve their performance. Thirdly, guidelines for conflict management can be developed based on the insights identified, especially when linked to the different types of teams, settings or operating conditions. And finally, managers can also get inspiration to develop their leadership further, thanks to the hints on how the different leadership styles influence team processes.

Nevertheless, this study also present limitations. We have concentrated on team processes themselves, whereas we could have explored outcomes in more depth, particularly given the new perspectives on alternative ways to apprehend team effectiveness beyond performance. Regarding the triad cognition – affect – behaviour, despite us having clearly underscored it in the traditional schools of thought, we could have developed a more integrated approach in our analysis of recent research streams, delving particularly into how these levers interconnect between themselves and how the triad deploys across the different dimensional layers (individual, team, organization). Regarding leadership and considering how relevant it has become to study team processes, it could be useful to systematize its understanding, delving particularly into its role as input, mediator or outcome, depending on the different models developed by recent research we look at. Finally, we could also have undertaken a more

profound analysis on methodologies, resuming the excluded articles of the classical schools of thought and analysing in more detail the crafting of more recent models.

As routes for future research, we reinforce the request for more analysis on the temporal nature of team processes, either through longitudinal studies or new methodological approaches. Innovating in how we visually represent team processes can also be fruitful to overcome the limitations of theory heuristics and leveraging computational modelling or social network analysis can offer interesting routes for further exploration, as well as more extensive descriptive efforts to capture the transformation of teams. Regarding the triad cognition – affect – behaviour, we hope that further study will deep dive into their combined influences, particularly from a multidimensional perspective. Finally, when it comes to leadership, further and systematic analysis on its relationship with team processes and team effectiveness will undoubtedly be extremely enriching.

Thanks to a BIBGT approach, we have identified the conceptual pillars that structure our understanding of team processes and how these have evolved and been enriched by subsequent theory. We believe that recent research shows promising avenues to overcome the challenges posed by capturing the dynamic nature of team process, and we hope that our suggested pathways will contribute to these efforts.

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7. APPENDIX

Map of schools of thought generated by ARTIREV (CCA analysis):

Cluster	Label on the map	Title	Raw citation count	Number of references connected	Sum of the number of connections	Number of links within the cluster	Local hubness
1	Baron (1986)	baron, (1986) the moderator-mediator variable distinction in social psychological research: conceptual, strategic, and statistical considerations. journal of personality and social psychology, 51(6), 1173 doi: 10.1037/0022-3514.51.6.1173	14	22	46	15,85	1,08
1	Cohen (1997)	cohen, s.g. and bailey, d.e. (1997), "what makes teams work: group effectiveness research from the shop floor to the executive suite", journal of management, vol. 23 no. 3, pp. 239-90 doi : 10.1177/014920639702300303	14	23	54	12,83	0,87
1	De Dreu (2003)	de dreu, c.k.w. and weingart, l.r. (2003), "task versus relationship conflict, team performance, and team member satisfaction: a meta-analysis", journal of applied psychology, vol. 88 no. 4, pp. 741-749 doi : 10.1037/0021-9010.88.4.741	14	25	95	12,29	0,84
1	Gersick (1988)	gersick, c.j.g. (1988), "time and transition in work teams: toward a new model of group development", academy of management journal, vol. 31 no. 1, pp. 9-41 doi : 10.2307/256496	14	25	84	14,7	1
1	Hackman (1987)	hackman j. r., (1987) handbook of organizational behavior. 315	14	25	55	17,44	1,19
1	Jehn (1995)	jehn, k.a. (1995), "a multi method examination of the benefits and detriments of intragroup conflict", administrative science quarterly, vol. 40 no. 2, pp. 256-282 doi : 10.2307/2393638	9	25	67	14,05	0,96
1	Jehn (2001)	jehn, k.a. and mannix, e.a. (2001), "the dynamic nature of conflict: a longitudinal study of intragroup conflict and group performance", academy of management journal, vol. 44 no. 2, pp. 238-251 doi : 10.2307/3069453	11	18	41	17,14	1,05
1	Marks Michelle (2001)	marks michelle a., mathieu john e., zaccaro stephen j. (2001) a temporally based framework and taxonomy of team processes. academy of management review, 26(3), 356-356 doi: 10.2307/259182	15	23	82	13,86	0,94
1	Mcgrath (1991)	mcgrath, j. e. (1991). time, interaction, and performance (tip) a theory of groups. small group research, 22(2), 147-174 doi : 10.1177/1046496491222001	9	19	40	12,7	0,69
1	Pelled Lisa (1999)	pelled lisa hope, eisenhardt kathleen m., xin katherine r. (1999) exploring the black box: an analysis of work group diversity, conflict and performance. administrative science quarterly, 44(1), 1-28 doi: 10.2307/2667029	9	22	44	17,77	1,09
1	Tuckman (1965)	tuckman, b.w. (1965), "developmental sequence in small groups", psychological bulletin, vol. 63, pp. 384-99 doi : 10.1037/h0022100	9	19	44	18,97	1,29
2	Edmondson (1999)	edmondson, a. (1999), "psychological safety and learning behaviour in work teams", administrative science quarterly, vol. 44 no. 2, pp. 350-383 doi : 10.2307/2666999	12	20	48	12,62	1,12
2	Ilgen (2005)	ilgen, d.r., hollenbeck, j.r., johnson, m. and jundt, d. (2005), "teams in organizations: from input-process-output models to imoi models", annual review of psychology, vol. 56 no. 1, pp. 517-543 doi : 10.1146/annurev.psych.56.091103.070250	19	25	107	10,49	0,93
2	James (1993)	james, l.r., demaree, r.j. and wolf, g. (1993), "rwg: an assessment of within group interrater agreement", journal of applied psychology, vol. 78 no. 2, pp. 306-309 doi : 10.1037/0021-9010.78.2.306	13	22	60	11,2	0,99
2	Kozlowski (2006)	kozlowski, s.w.j. and ilgen, d.r. (2006), "enhancing the effectiveness of work groups and teams", psychological science in the public interest, vol. 7 no. 3, pp. 77-124 doi : 10.1111/j.1529-1006.2006.00030.x	18	23	101	11,01	0,97
2	Lepine Jeffery (2008)	lepine jeffery a., piccolo ronald f., jackson christine l., mathieu john e., saul jessica r. (2008) a meta-analysis of teamwork processes: tests of a multidimensional model and relationships with team effectiveness criteria. personnel psychology, 61(2), 273 doi: 10.1111/j.1744-6570.2008.00114.x	24	24	135	11,2	0,99
2	Marks (2001)	marks, m.a., mathieu, j.e. and zaccaro, s.j. (2001), "a temporally based framework and taxonomy of team processes", academy of management review, vol. 26 no. 3, pp. 356-376 doi : 10.5465/amr.2001.4845785	26	24	117	10,87	0,96
2	Mathieu (2000)	mathieu, j.e., heffner, t.s., goodwin, g.f., salas, e. and cannon-bowers, j.a. (2000), "the influence of shared mental models on team process and performance", journal of applied psychology, vol. 85 no. 2, pp. 273-283 doi : 10.1037/0021-9010.85.2.273	13	19	46	12,3	1,09
2	Mathieu (2008)	mathieu, j.e., maynard, m.t., rapp, t. and gilson, l. (2008), "team effectiveness 1997-2007: a review of recent advancements and a glimpse into the future", journal of management, vol. 34 no. 3, pp. 410-476 doi : 10.1177/0149206308316061	23	25	125	10,74	0,95
2	Podsakoff (2003)	podsakoff, (2003) common method biases in behavioral research: a critical review of the literature and recommended remedies. journal of applied psychology, 88(5), 879 doi: 10.1037/0021-9010.88.5.879	17	23	71	11,38	1,01
3	Campion (1993)	campion, m.a., medsker, g.j. and higgs, a.c. (1993), "relations between work group characteristics and effectiveness: implications for designing effective work groups", personnel psychology, vol. 43, pp. 823-50 doi : 10.1111/j.1744-6570.1993.tb01571.x	11	23	58	9,42	1,12
3	Gladstein Deborah (1984)	gladstein deborah l. (1984) groups in context: a model of task group effectiveness. administrative science quarterly, 29(4), 499-499 doi: 10.2307/2392936	11	21	47	10,06	1,2
3	James Lawrence (1984)	james lawrence r., demaree robert g., wolf gerrit (1984) estimating within-group interrater reliability with and without response bias.. journal of applied psychology, 69(1), 85-98 doi: 10.1037/0021-9010.69.1.85	22	25	98	7,02	0,84
3	Joshi (2002)	joshi aparna, beaubien j. matthew, gully stanley m., incalcaterra kara a. (2002) a meta-analysis of team-efficacy, potency, and performance: interdependence and level of analysis as moderators of observed relationships.. journal of applied psychology, 87(5), 819 doi: 10.1037/0021-9010.87.5.819	9	20	53	5,6	0,67
3	Sundstrom (1990)	sundstrom eric, de meuse kenneth p., futrell david (1990) work teams: applications and effectiveness.. american psychologist, 45(2), 120 doi: 10.1037/0003-066x.45.2.120	10	20	53	9,79	1,17
4	Chan David (1998)	chan david (1998) functional relations among constructs in the same content domain at different levels of analysis: a typology of composition models.. journal of applied psychology, 83(2), 234 doi: 10.1037/0021-9010.83.2.234	9	20	53	0	0

Map of recent research themes generated by ARTIREV (BCA analysis):

Cluster	Label on the map	Title	Year	Raw citation count	Normalized citation count	Local Hubness	Number of docs connected	Number of docs connected in cluster
1	Wise S. (2021)	A team mental model approach to understanding team effectiveness in an emergency department: A qualitative study	2021	8	1,28	0,01	2	2
1	Liu J. (2014)	Innovation Performance in New Product Development Teams in <scp>C</scp>hina's Technology Ventures: The Role of Behavioral Integration Dimensions and Collective Eff	2014	85	1,15	0,89	38	9
1	Johnson A. (2018)	Reaping the Rewards of Functional Diversity in Healthcare Teams: Why Team Processes Improve Performance	2018	29	1,06	2,02	44	10
1	Vandekerkhof P. (2017)	Socio-Emotional Wealth Separation and Decision-Making Quality in Family Firm TMTs: The Moderating Role of Psychological Safety	2017	79	2,57	1,46	39	9
1	Rousseau V. (2010)	Team Self-Managing Behaviors and Team Effectiveness: The Moderating Effect of Task Routineness	2010	74	1,17	1,27	44	8
1	Collins C. (2010)	Team capability beliefs over time: Distinguishing between team potency, team outcome efficacy, and team process efficacy	2010	65	1,02	0,77	37	7
1	Marques Santos C. (2013)	Team mental models, relationship conflict and effectiveness over time	2013	41	1,13	1,49	46	9
1	Zhang Y. (2018)	TeamSense	2018	28	1,02	0	2	1
1	Reiter-Palmon R. (2018)	The Effect of Problem Construction on Team Process and Creativity	2018	36	1,31	0,11	10	5
1	Ling Y. (2010)	The Effects of Family Firm Specific Sources of TMT Diversity: The Moderating Role of Information Exchange Frequency	2010	204	3,22	0,77	26	7
1	Lee C. (2017)	The effect of team emotional intelligence on team process and effectiveness	2017	51	1,66	1,36	26	9
1	Thiel C. (2017)	What Doesn't Kill You Makes You Stronger: How Teams Rebound From Early-Stage Relationship Conflict	2017	33	1,07	1,84	39	10
2	Kozlowski S. (2015)	Advancing research on team process dynamics	2015	185	1,36	1,4	42	11
2	Hagemann V. (2017)	Complex Problem Solving in Teams: The Impact of Collective Orientation on Team Process Demands	2017	41	1,33	0,77	38	11
2	Elms A. (2022)	Confidence Is Key: Collective Efficacy, Team Processes, and Team Effectiveness	2022	14	2,52	1,17	41	11
2	He H. (2014)	Modeling team knowledge sharing and team flexibility: The role of within-team competition	2014	84	1,13	0,78	38	10
2	Leenders R. (2016)	Once upon a time	2016	103	1,02	0,89	35	10
2	Grenier S. (2024)	Self-determination theory and its implications for team motivation	2024	9	4,24	0,9	39	11
2	Schecter A. (2017)	Step by step: Capturing the dynamics of work team process through relational event sequences	2017	51	1,66	1,26	34	11
2	Handke L. (2019)	Teams, Time, and Technology: Variations of Media Use Over Project Phases	2019	19	0,61	1,34	41	11
2	Mathieu J. (2019)	The Development and Construct Validity of a Team Processes Survey Measure	2019	66	2,13	1,05	38	10
2	Peifer C. (2021)	The Symphony of Team Flow in Virtual Teams. Using Artificial Intelligence for Its Recognition and Promotion	2021	12	1,92	0,21	17	8
2	Mesmer-Magnus J. (2017)	The cognitive underpinnings of effective teamwork: a continuation	2017	33	1,07	0,67	42	11
2	Gupta S. (2023)	The roles of conflict management and psychological empowerment in virtual teams	2023	4	1,05	1,55	44	11
3	Priesemuth M. (2014)	Abusive Supervision Climate: A Multiple-Mediation Model of its Impact on Group Outcomes	2014	167	2,25	1,94	43	10
3	Sivasubramaniam N. (2012)	Determinants of New Product Development Team Performance: A Meta-analytic Review	2012	121	2,25	0,98	43	10
3	Kwak C. (2020)	Do teams need both hands? An analysis of team process ambidexterity and the enabling role of information technology	2020	12	0,86	0,31	30	9
3	Owens B. (2016)	How Does Leader Humility Influence Team Performance? Exploring the Mechanisms of Contagion and Collective Promotion Focus	2016	333	3,3	1,2	41	10
3	Li A. (2013)	Justice Climate and Peer Justice Climate	2013	34	0,94	1,25	36	10
3	Hu J. (2015)	Making a Difference in the Teamwork: Linking Team Prosocial Motivation to Team Processes and Effectiveness	2015	183	1,34	1,28	40	10
3	Cropanzano R. (2011)	Peer Justice and Teamwork Process	2011	62	1,71	1,44	39	10
3	Bilal A. (2020)	Servant leadership: a new perspective to explore project leadership and team effectiveness	2020	22	1,57	0,72	39	9
3	Solansky S. (2011)	Team identification: a determining factor of performance	2011	55	1,52	0,41	30	9
3	Lu H. (2021)	The Dual Effect of Transformational Leadership on Individual- and Team-Level Performance: The Mediational Roles of Motivational Processes	2021	4	0,64	0,83	37	8
3	Ledoux J. (2011)	The Impact of Interpersonal Perceptions on Team Processes	2011	20	0,55	0,65	36	9
4	Owens D. (2011)	An empirical investigation of virtual world projects and metaverse technology capabilities	2011	85	2,34	0,29	22	6
4	Keller S. (2024)	Behavioral sciences applied to acute care teams: a research agenda for the years ahead by a European research network	2024	4	1,88	0,06	3	2
4	Fisher C. (2024)	Caught Between a Clock and a Hard Place: Temporal Ambivalence and Time (Mis)management in Teams	2024	4	1,88	0,5	18	6
4	Wei X. (2023)	Does passion matter for team innovation? The conditional indirect effects of team harmonious versus obsessive passion via team reflexivity	2023	4	1,05	0,71	34	6
4	Brennan S. (2013)	Measuring team factors thought to influence the success of quality improvement in primary care: a systematic review of instruments	2013	56	1,54	2,06	42	8
4	Schmutz J. (2018)	Reflection in the heat of the moment: The role of in-action team reflexivity in health care emergency teams	2018	57	2,08	2,31	43	9
4	Ishak A. (2017)	Slides in the Tray: How Fire Crews Enable Members to Borrow Experiences	2017	22	0,72	1,06	22	9
4	Valentine M. (2015)	Team Scaffolds: How Mesolevel Structures Enable Role-Based Coordination in Temporary Groups	2015	162	1,19	1,02	27	7
4	Rowland P. (2018)	Team dynamics within quality improvement teams: a scoping review	2018	21	0,77	0,53	12	4
4	Wiedow A. (2010)	Two-Dimensional Structure of Team Process Improvement: Team Reflection and Team Adaptation	2010	51	0,8	1,69	46	9
4	Rosing F. (2022)	When timing is key: How autocratic and democratic leadership relate to follower trust in emergency contexts	2022	18	3,25	0,78	31	8
5	Chen W. (2022)	How shared leadership affects team performance: examining sequential mediation model using MASEM	2022	7	1,26	0,75	36	4
5	Zhou W. (2017)	How shared leadership and team personality composition interact to improve entrepreneurial team performance	2017	24	0,78	1,09	36	5
5	Wu Q. (2021)	Shared Leadership and Team Effectiveness: An Investigation of Whether and When in Engineering Design Teams	2021	18	2,88	1,36	29	5
5	Engel Small E. (2010)	Shared Leadership in Teams	2010	105	1,65	0,4	31	4
5	Han S. (2018)	Shared leadership in teams	2018	44	1,6	1,09	41	5
5	Gan X. (2023)	Transforming vertical leadership into shared leadership in infrastructure project teams: a dual-pathway perspective	2023	5	1,32	1,32	27	5