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Teamwork Behaviors

A Review and an Integration of Frameworks

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The existing body of literature on teamwork behaviors is substantial and offers many different conceptualizations. However, there is a lack of consensus concerning the conceptual structure of teamwork behaviors. Many researchers pursue their own work without any attempt to build on and integrate the work of others. This article reviews the frameworks of teamwork behaviors in the literature on work teams and provides a way of integrating these frameworks. The behavioral dimensions included in this integrative framework are conceptually distinguished and arranged in a hierarchical conceptual structure based on theoretical approaches. Moreover, they are framed from the perspective of the timing of teamwork behaviors to clarify when these behaviors are most likely to have their intended effects. The proposed framework is then connected to the task conditions under which teamwork behaviors are most likely to facilitate collective task accomplishment. Finally, future directions for research regarding teamwork behaviors are discussed.

Keywords: *work teams; teamwork behaviors; literature review; taxonomy*

In many organizations, the basic unit of the structure of work organization is the team rather than the individual (Devine, Clayton, Philips, Dunford, & Melner, 1999). In other words, individuals work in teams to achieve tasks that require collective action. A work team is defined as any formal and

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permanent whole of at least two interdependent individuals who are collectively in charge of the achievement of one or several tasks defined by the organization (Gladstein, 1984; Sundstrom, DeMeuse, & Futrell, 1990). Thus, the raison d'être of a work team is centered primarily on the production of a good or a service intended for the internal or external customers of the organization.

There are many advantages to setting up work teams, such as increased productivity, innovation, and employee satisfaction (Katzenbach & Smith, 1993; West, Borrill, & Unsworth, 1998). However, the implementation of work teams does not always result in success for the organization (Allen & Hecht, 2004). Indeed, it is not enough to put individuals together and expect that they will know automatically how to work in a team (A. Prince, Brannick, Prince, & Salas, 1997; Rentsch, Heffner, & Duffy, 1994; Salas, Bowers, & Cannon-Bowers, 1995). Accordingly, several authors propose models aimed at accounting for the factors that are likely to increase the effectiveness of work teams (e.g., Campion, Medsker, & Higgs, 1993; Cohen, Ledford, & Spreitzer, 1996; Gladstein, 1984; Hackman, 1987; Tannenbaum, Beard, & Salas, 1992). Almost all of these models are based on the systemic approach "input → process → output" (cf. Hackman, 1987; McGrath, 1964). Inputs are conditions that exist prior to a performance episode and may include member, team, and organizational characteristics. Outputs are results and by-products of team activity that are valued by one or more constituencies, such as managers, customers, and team members. Processes describe how team inputs are transformed into outputs and tend to bring together all of the behavioral, cognitive, and affective phenomena existing in teams (Ilgen, Hollenbeck, Johnson, & Jundt, 2005; Marks, Mathieu, & Zacarro, 2001). However, behaviors are distinct from other individual attributes, such as cognitions (e.g., potency, shared mental models) and feelings (e.g., sense of belonging or affiliation) because they are the observable and measurable actions of individuals. Moreover, behaviors can affect the social and physical environment, whereas cognitions and feelings are intrinsic to the individuals and must be translated into behaviors to have an effect on the environment.

In work team settings, members' behaviors may be divided into two main categories, namely task work behaviors and teamwork behaviors (McIntyre & Salas, 1995; Morgan, Glickman, Woodward, Blaiwes, & Salas, 1986). The first category involves the operations-related activities to be performed by team members (Morgan, Salas, & Glickman, 1993). These behaviors contribute directly to the accomplishment of tasks and are related to the technical aspects of the tasks that exist independently of work organization

(individuals working alone or in a team). Thus, task work behaviors are needed for the performance of specified tasks, and they may not be generalized to other team tasks.

Teamwork behaviors, in contrast, are inherent to the existence of work teams (Cannon-Bowers, Tannenbaum, Salas, & Volpe, 1995). These behaviors represent the overt actions and verbal statements displayed during interactions between team members to ensure a successful collective action (Morgan et al., 1993). In other words, teamwork behaviors are required of team members for effective team performance (Taggar & Brown, 2001).[1] Indeed, the collective nature of a team task implies that team members interact and share resources to complete their duties, which means that they are interdependent regarding task accomplishment (Van der Vegt & Van de Vliert, 2002). Moreover, individual efforts need to be aligned and coordinated while keeping the team members together (Bowers, Morgan, Salas, & Prince, 1993; McIntyre & Salas, 1995; Murphy & Cleveland, 1995; Smith-Jentsch, Johnston, & Payne, 1998). In short, teamwork behaviors facilitate the achievement of collective tasks and consequently increase team performance.

Teamwork behavior is a multifaceted concept that has been difficult to conceptualize. Through the years, an increasing number of frameworks have been proposed to provide a classification of teamwork behaviors (e.g., Cannon-Bowers et al., 1995; Hoegl & Gemuenden, 2001; Marks et al., 2001). These categorization schemes aim to delineate the diverse behavioral processes or behavioral dimensions of teamwork behaviors, such as communication, coordination, and cooperation. Though these frameworks present some commonalities, there are many differences among them that are not dealt with by their authors (e.g., the nature and the number of dimensions). Moreover, in some cases, the dimensions of teamwork behaviors are ill-defined and difficult to clearly distinguish. Consequently, the lack of agreement on the conceptualization of teamwork behaviors impedes the production of valid generalizations about the functioning of work teams.

The goals of the current article are to summarize the frameworks of teamwork behaviors in the literature and propose a hierarchical set of performance-relevant behaviors that define effective teamwork. Specifically, a review of frameworks will be presented to reveal the diversity of ways that teamwork behaviors can be conceptualized. Then, based on a conceptual analysis of these frameworks and on theoretical approaches, we will expose an integrative framework that reconciles the discrepancies among the previous works and further refines the temporal considerations. Finally, we

will discuss the conditions of task design under which teamwork behaviors are most likely to facilitate collective task accomplishment. In short, the main contribution of this article is to build on previous works to propose a comprehensive, while parsimonious, framework of teamwork behaviors.

Review of Frameworks of Teamwork Behaviors

A systematic search was conducted to find theoretical or empirical studies containing frameworks of teamwork behaviors. Specifically, these studies were located through computerized searches (Business Source Premier, Current Content, Proquest, PsycINFO, ScienceDirect) and examination of the references of monographs and articles. In selecting frameworks for analysis in this article, three criteria were used. First, this review focuses on frameworks that are related to work teams in organizational settings, excluding those specifically related to teams in other settings (e.g., sports teams). Second, based on a postulate that teamwork behaviors are a multidimensional construct, only studies that explicitly identified at least two behavioral dimensions of teamwork behaviors were included, thus ruling out studies that were knowingly limited to only one dimension of teamwork behaviors (e.g., a study on conflict management). Finally, studies of the behavioral dimensions that facilitate the accomplishment of collective tasks and increase team performance were selected, excluding frameworks of counterproductive behaviors. This article reviews a total of 29 frameworks of teamwork behaviors published between 1984 and 2005 (see Table 1).

Although these frameworks help to underscore the importance of teamwork behaviors in work team settings, there are at least three notable limitations characterizing this body of frameworks. First, this review reveals a lack of consensus concerning the dimensionality of teamwork behaviors. As seen in Table 1, the number of behavioral dimensions per framework varies from 2 to 10. Some dimensions are very specific (e.g., affect management), and others are very general (e.g., interpersonal relations). Many researchers pursue their own work without any attempt to build on and integrate the work of others. Although some authors state that they performed thorough reviews of the literature, none of the frameworks considers all relevant teamwork behaviors. For instance, Marks et al.'s (2001) framework encompasses the highest number of behavioral dimensions (i.e., 10), but it does not include an innovation component, which is included in other frameworks (e.g., Cohen et al., 1996; Janz, Colquitt, & Noe, 1997). As a result, the conceptual structure of teamwork behaviors remains fuzzy.

Table 1
Frameworks of Teamwork Behaviors

Authors[a]	Dimensions of Teamwork Behaviors[b]
Bowers, Morgan, Salas, and Prince (1993)	Adaptability, communication, decision making, mission analysis, situational awareness
Campion, Medsker, and Higgs (1993)	Communication, cooperation, social support
Cannon-Bowers, Tannenbaum, Salas, and Volpe (1995)	Adaptability, communication, coordination, decision making, interpersonal relations, performance monitoring and feedback, shared situational awareness
Carson, Mosley, and Boyar (2004)	Rehearsal, self-criticism, self-expectation, self–goal setting, self-observation/evaluation, self-reinforcement
Cohen (1994)	Coordination, implementation of innovation, sharing of expertise
Cohen, Ledford, and Spreitzer (1996)	Coordination, innovation process
DeDreu and Van Vianen (2001)	Helping behavior, voice
Dominick, Reilly, and McGourty (1997)	Collaboration, communication, decision making, self-management
Druskat and Kayes (1999)	Attention to feedback, confronting members who break norms, creating clear work procedures, flexibility, interpersonal understanding, proactivity in problem solving, team self-evaluation, unified effort and cooperation
Erez, Lepine, and Elms (2002)	Cooperation, voice
Gladstein (1984)	Discussion of strategy, open communication, supportiveness
Hoegl and Gemuenden (2001)	Communication, coordination, mutual support
Janz, Colquitt, and Noe (1997)	Helping behavior, information sharing, innovating
Koslowski and Bell (2003)	Communication, cooperation, coordination
Marks, Mathieu, and Zaccaro (2001)	Affect management, conflict management, coordination, goal specification, mission analysis, monitoring progress toward goals, motivation and confidence building, strategy formulation, systems monitoring, team monitoring and backup behaviors
Mathieu, Heffner, Goodwin, Salas, and Cannon-Bowers (2000)	Communication, cooperation, coordination, strategy formation
McIntyre and Dickinson (1992)	Backup behaviors, communication, feedback, monitoring, coordination
McIntyre and Salas (1995)	Backing-up behaviors, closed-loop communication, feedback, performance monitoring

(continued)

Table 1 (continued)

Authors[a]	Dimensions of Teamwork Behaviors[b]
Morgan, Glickman, Woodward, Blaiwes, and Salas (1986)	Acceptance of suggestions or criticism, adaptability, communication, cooperation, coordination, giving suggestions or criticism, team spirit and morale
Prince and Salas (1993)	Adaptability/flexibility, communication, decision making, mission analysis, situation awareness
Salas, Sims, and Burke (2005)	Adaptability, backup behavior, mutual performance monitoring
Smith-Jentsch, Johnston, and Payne (1998)	Communication, information exchange, supporting behavior
Stanton (1996)	Communication, control, cooperation, coordination
Stevens and Campion (1994)	Collaborative problem solving, communication, conflict resolution, goal setting, performance management, planning, task coordination
Tannenbaum, Beard, and Salas (1992)	Communication, conflict resolution, coordination, decision making, problem solving
Tesluk and Mathieu (1999)	Communication, cooperation, coordination
Weldon, Jehn, and Pradhan (1991)	Extrarole behavior, morale-building communication, performance monitoring, planning
Weldon and Weingart (1993)	Cooperation, morale-building communication, planning
Yeatts and Hyten (1998)	Communication, cooperation (collaboration), coordination

a. The authors are presented in alphabetical order.
b. It should be noted that many authors did not specifically use the label *teamwork behaviors* in their study. Most of them included dimensions of teamwork behaviors in *team processes*. However, many team processes are not behavioral dimensions of teamwork behaviors, such as conflict, task focus, assertiveness, workload sharing, leadership, compliance, cohesion, effort, and boundary spanning. Consequently, the table reports only the behavioral dimensions relevant to teamwork behaviors as defined in this article.

Second, there is a multiplication of labels and definitions for the dimensions of teamwork behaviors. As noted by Cannon-Bowers et al. (1995), studies have often used different labels to refer to the same dimensions or similar labels to refer to different dimensions. The definitions of the dimensions are also many and varied. In some cases, authors do not even define the meaning of behavioral dimensions. Thus, this review reveals the need to distinguish conceptually among the behavioral dimensions included in the frameworks reviewed. Finally, the issue of the timing of teamwork behaviors is neglected in the development of the frameworks. Only Marks et al. have developed a temporally based framework of teamwork behaviors that

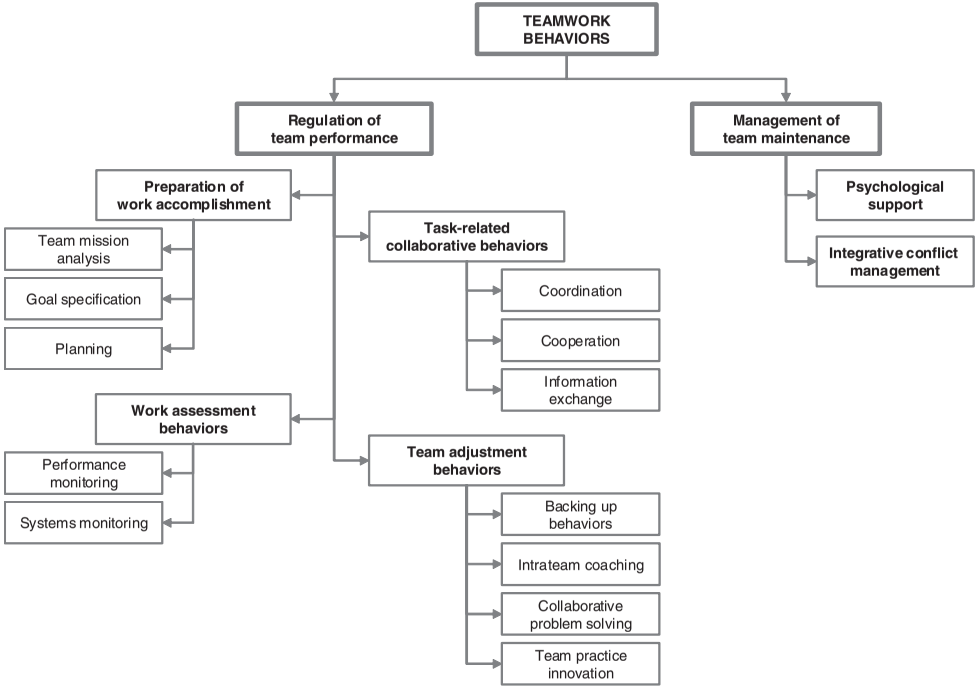
composes a cycle of transition and action phases. In the first phase, work is evaluated and planned (transition phase), whereas in the second phase, work is accomplished (action phase). Essentially, this model distinguishes among behavioral processes that may occur before and those that may occur during task execution. However, these two phases represent an oversimplification of the timing of teamwork behaviors because the transition phase could be examined at a more fine-grained level. Nevertheless, Marks et al.'s framework provides an interesting point of departure for further efforts that address the timing of teamwork behaviors. Considering the limitations of the frameworks presented in Table 1, a step forward could be taken by proposing an integrative framework of teamwork behaviors that reconciles the discrepancies among the previous works and refines the temporal considerations of the dimensions of teamwork behaviors.

Integrative Framework of Teamwork Behaviors

The development process of an integrative framework began with an inductive content analysis of the reviewed frameworks to capture the conceptual meaning of each behavioral dimension. This detailed description was then used for analyzing the commonalities and differences across frameworks. This led to the identification of conceptually distinct behavioral dimensions. This process also implied identifying representative labels and definitions that capture the underlying concepts. To represent the links between the behavioral dimensions, they were thereafter categorized by using a theory-driven approach and by focusing on a time-framed perspective. According to Komaki, Zlotnick, and Jensen (1986), a theory-based approach provides a sound basis for the identification of meaningful categories and makes it possible to use future empirical results to confirm, disconfirm, or supplement the theory. Furthermore, by taking into account the timing of teamwork behaviors, the integrative framework enhances our understanding of when these behaviors are most likely to have their intended effects (Arrow, Poole, Henry, Wheelan, & Moreland, 2004).

To provide a comprehensive framework, the dimensions are arranged within a hierarchical conceptual structure (see Figure 1). Based on a functional approach (Wittenbaum et al., 2004), teamwork behaviors may assume two basic functions that are related to the performance and maintenance of the teams. Indeed, early research on small groups clearly demonstrated that members' behaviors primarily addressed these two functions (e.g., Bales, 1950; Benne & Sheats, 1948). In work team settings, the performance

Figure 1
Schematic Representation of the Hierarchical Conceptual Structure of Teamwork Behaviors



function involves the achievement of work-related team goals. The maintenance function implies holding team members together. Thus, the higher order categories of teamwork behaviors are called the regulation of team performance and the management of team maintenance.

Regulation of Team Performance

The classification of the dimensions of teamwork behaviors associated with the regulation of team performance is based on the action regulation theory (Frese & Zapf, 1994). This theory posits that individuals can attain a high performance level if they sequentially apply regulation functions of task completion (Arrow et al., 2004; Hacker, 2003; Tschan, 2002). These functions are preparation, execution, evaluation, and adjustment. More specifically, before achieving a task, individuals have to orient themselves to set a standard of comparison for subsequent action (preparation phase). When they know what they have to do, they execute the planned actions (execution phase). As the task accomplishment progresses, the monitoring and evaluation of action execution and environmental conditions help individuals to determine if their actions have moved them closer to attaining their goals and if the conditions allow them to continue as planned (evaluation phase). This evaluation may lead them to make adjustments to complete the tasks (adjustment phase).

The functions identified in the action regulation theory serve to classify the behavioral dimensions associated with task accomplishment. Thus, these functions may be transposed in teamwork behavior terms as preparation of work accomplishment (preparation function), task-related collaborative behaviors (execution function), work assessment behaviors (evaluation function), and team adjustment behaviors (adjustment function). In addition, the conceptual analysis of reviewed frameworks leads one to propose specific dimensions that are respectively included in these categories.

Preparation of work accomplishment. Before leaping to task achievement, there is a phase of preparation of work accomplishment (Hacker, 2003). During this period, team members can guide their accomplishment of tasks by focusing on analyzing and planning activities. The behavioral dimensions belonging to preparation of work accomplishment are team mission analysis, goal specification, and planning. From a rational temporal perspective, team mission analysis takes place before goal specification, which in turn occurs before planning.

Team mission analysis refers to the collective interpretation and evaluation of the team's purpose, including identification of its main tasks and the

operative environmental conditions and team resources available for carrying out the mission (Marks et al., 2001). Considering that events can be interpreted in a variety of ways and individualized interpretations can lead to disorganized responses (Kozlowski, Gully, Nason, & Smith, 1999), team mission analysis ensures that all members understand the team purpose and have a shared vision of it, which is especially important for team members who have not worked together before (C. Prince & Salas, 1993). When team members analyze the team purpose within the organization, they seek and process information about what the team has to accomplish and about the conditions for doing so. Moreover, they identify their preferences and competencies to figure out what contributions each team member can make to the mission. A thorough mission analysis makes it easier for team members to focus their attention and efforts on what is really important from the perspective of the team's raison d'être (Sundstrom et al., 1990). At the conceptual level, some authors, such as C. Prince and Salas (1993), include planning aspects in mission analysis. However, these two dimensions are conceptually different from each other; the former refers to the elaboration of a plan designed to achieve the team's purpose, and the latter concerns the analysis of the team's purpose.

After performing mission analysis, team members are able to set goals that are connected to the purpose of their team within the organization. Goal specification refers to the identification of the level of performance that team members have to achieve (Weldon & Weingart, 1993). In work team settings, the main team goals can be decomposed into several partial goals. According to the goal-setting theory, goals have the power to motivate and are important regulators of human action because they energize and direct behavior (Locke & Latham, 1990, 2002; O'Leary-Kelly, Martocchio, & Fring, 1994). To be effective, goals must be specific, challenging, and accepted (Locke & Latham, 1990; Stevens & Campion, 1994). When a goal is specific, team members know exactly what is expected from them in terms of performance, and they are better able to align their activities to reach this target. Indeed, having a goal in mind, team members tend to focus their attention on behaviors leading to goal attainment and ignore activities irrelevant to the goal. A challenging goal is one that is difficult to reach but attainable. The energy generated by the goal is proportional to its difficulty. However, a goal can have an effect on team performance only if team members accept it and are committed to reaching it (Hollenbeck & Klein, 1987). The specification of goals at the team level gives team members the incentive to work together (Weldon & Weingart, 1993). It is also useful to set goals at the individual level to avoid social loafing

(Latané, Williams, & Harkins, 1979), but they must be coherent and subordinated to team goals to avoid competition among team members.

The specification of goals enables team members to establish a plan of action to reach the goals (Tschan & von Cranach, 1996). Planning refers to the development of alternative courses of action for task accomplishment (Diefendorff & Lord, 2003; Weingart, 1992). It is also called discussion of strategy (Gladstein, 1984) and strategy formulation (Marks et al., 2001). Thus, planning is the activity that is carried out to produce a performance plan which, if executed, will lead to a specific outcome. A performance plan describes the distribution of work among team members, the order and timing of task-related activities, and the methods used to integrate the actions of team members to produce a coherent whole (Weldon, Jehn, & Pradhan, 1991; Weldon & Weingart, 1993). When team members perform in a dynamic and unpredictable environment, they can be enabled to react appropriately through the elaboration of a contingency plan, which corresponds to the a priori formulation of alternative plans and strategy adjustments in response to anticipated changes in the performance environment (Marks et al., 2001). By working together to specify time-and-function-linked series of actions, team members may derive many benefits, for example task execution is made easier to understand, a shared mental model of the task accomplishment develops, potential obstacles can be identified and anticipated, distractions are prevented, and there is an increased likelihood of timely and appropriate initiation of goal-directed activities (Diefendorff & Lord, 2003; Hackman, 1987; Pearce & Ravlin, 1987; Stout, Cannon-Bowers, Salas, & Milanovich, 1999; Tschan & von Cranach, 1996). The absence of strategy or an ineffective strategy may force teams to rely completely on past experience or improvise as they perform, which can be exceedingly difficult for complex and novel tasks (Marks et al., 2001). The amount of planning required to arrive at a suitable strategy is related to the number of factors that may influence team performance, such as situational and time constraints, team resources, member expertise, and the changing nature of the environment (Weingart, 1992; Weldon & Weingart, 1993).

Task-related collaborative behaviors. According to the action regulation theory (Frese & Zapf, 1994), when individuals know the activities required of them to reach task goals, they can go through an execution phase, which consists of putting into action what has been planned. In work team settings, team members may enhance task accomplishment through task-related collaborative behaviors. A conceptual analysis of reviewed frameworks

led to the identification of three behavioral dimensions related to this execution phase, namely coordination, cooperation, and information exchange. Coordination refers to integrating team members' activities to ensure task accomplishment within established temporal constraints (Cannon-Bowers et al., 1995). In work teams, the outcome is the end result of numerous contributions by all team members and implies mutual adjustment (Tesluk, Mathieu, Zaccaro, & Marks, 1997). Moreover, the contributions by a team member are contingent on correct and timely contributions by other teammates (Kozlowski & Bell, 2003). Thus, a lack of or a failure in coordination between team members could prevent the team from carrying out the established steps or procedures for doing the work (Yeatts & Hyten, 1998). This situation causes what Steiner (1972) called "process losses," which refer to a difference between actual productivity and potential productivity. By coordinating their actions, team members ensure that tasks are sequenced, synchronized, integrated, and completed within established temporal constraints without duplicating or wasting efforts (Cannon-Bowers et al., 1995; Spreitzer, Cohen, & Ledford, 1999). It should be noted that all of the authors who referred to this dimension used the same term (see Table 1). Still, some authors, such as Yeatts and Hyten (1998), integrated planning into this dimension, but considering the model of action regulation functions, planning occurs before action execution and coordination takes place during action execution.

Wagner (1995) defined cooperation as "the willful contribution of personal effort to the completion of interdependent jobs" (p. 152). This dimension is also called collaboration (Kozlowski & Bell, 2003; Yeatts & Hyten, 1998). Cooperation means that two or more team members work together on task accomplishment (Yeatts & Hyten, 1998). Cooperative behaviors promote the integration of members' task-focused inputs by mutual facilitation (Erez, Lepine, & Elms, 2002). By cooperating, team members may complete tasks and reach goals that would be difficult or impossible to complete otherwise (Eby & Dobbins, 1997; Weldon & Weingart, 1993; Yeatts & Hyten, 1998). It should be noted that in some studies, cooperation is viewed as a way of interacting in work teams and includes many dimensions of teamwork behaviors, such as information exchange and social support (e.g., Tjosvold, 1984). However, in this article, cooperation is defined more narrowly to reflect, specifically, the act of working together during task execution.

Information exchange may be defined as the extent to which team members share task-related information among themselves. Many expressions are related to the notion of information exchange, such as information

sharing (Janz et al., 1997), open communication (Gladstein, 1984), and closed-loop communication (McIntyre & Salas, 1995). Team members may use different means to transmit information to one another, for instance scheduled meetings, written status reports, talks in the hallway, phone calls, and e-mails. However, direct communication with other teammates may be less time-consuming and may help to avoid faulty transmission (Hoegl & Gemuenden, 2001). Whenever new task-related information comes to a team member, a quick dissemination to the appropriate recipients within the team may facilitate task accomplishment (Stout et al., 1999). Information may concern, for example, resource availability, demands from customers, new information from management or suppliers, and delays in production. Teams in which relevant work information circulates freely and easily may be more effective because the collective nature of team tasks implies that each member possesses the information that is necessary to do his or her work (Campion et al., 1993; Gladstein, 1984; Pearce & Ravlin, 1987). Even though the term "communication" is present in almost every framework (see Table 1), the label *information exchange* was chosen here instead of *communication* because the definitions of this latter notion vary from one author to another. Moreover, some authors partially or totally define communication as the quality of expression by insisting, for example, on the use of proper phraseology or the audibility of the transmission (e.g., Cannon-Bowers et al., 1995; Smith-Jentsch et al., 1998). However, the quality of expression is not, per se, a behavioral dimension of teamwork because it is inherent to any verbal interaction. Indeed, when team members interact, they should understand each other, otherwise they will not be able to engage effectively in any of the behavioral processes included in teamwork behaviors. Consequently, the quality of expression helps to reduce the distortion between what is said and what is understood, and it is a necessary condition for most of the teamwork behaviors based on verbal interaction. Nevertheless, it does not constitute a distinct dimension of teamwork behaviors.

Work assessment behaviors. As team members make progress toward task completion, the monitoring of their performance and their environment enable them to make sure that they are doing the right thing (Salas, Sims, & Burke, 2005). This function of evaluation is carried out through work assessment behaviors, which include two behavioral dimensions, namely performance monitoring and systems monitoring. Performance monitoring refers to tracking progress toward goal attainment and determining what needs to be accomplished for goal attainment (Marks et al., 2001; Marks &

Panzer, 2004). This notion may also be called "monitoring progress toward goals" (Marks et al., 2001). Performance monitoring indicates that team members keep track of fellow team members' work while carrying out their own (McIntyre & Salas, 1995). Keeping track may mean observing work accomplishment to make certain that everything is running as expected and observing fellow team members to ensure that they are following procedures correctly and in a timely manner. Performance monitoring enables team members to recognize when they make mistakes or perform inadequately (Marks & Panzer, 2004). It is a means of self-regulation to determine whether team members' actions have moved them closer to attaining the goals (Ilgen, 1999; Weldon et al., 1991). Consequently, by monitoring their performance, team members are likely to react properly when performance gaps emerge or when they veer off in a different direction.

In addition to monitoring the team performance, team members may pay attention to their environment. The behavioral dimension associated with this specific function is systems monitoring, which is defined as "tracking team resources and environmental conditions as they relate to task accomplishment" (Marks et al., 2001, p. 367). More precisely, this dimension involves, on the one hand, monitoring team resources, such as personnel, equipment, and other information that is generated, and, on the other hand, monitoring environmental conditions relevant to the team, such as market requirements and organizational changes. When team members monitor their environment, both internal and external to the teams themselves, they are better able to apply appropriate task strategies and respond in a timely fashion to the changes that occur as they perform (Cannon-Bowers et al., 1995; Marks et al., 2001). Over time there will likely be changes in some of the conditions on which team performance is contingent (Argote & McGrath, 1993). Consequently, when team members work in dynamic environments, the monitoring of environmental conditions enables them to detect any changes and to make appropriate responses. It should be noted that systems monitoring and situational awareness share some conceptual similarities. However, the expression *systems monitoring* is preferred to *situational awareness* because the latter refers more to an individual-level cognitive component of the evaluation function whereas the former better reflects the behavioral component of the evaluation process (Smith-Jentsch et al., 1998). In other words, situational awareness refers to a psychological state rather than an overt behavior.

Team adjustment behaviors. According to the action regulation theory (Frese & Zapf, 1994), the evaluation function may lead team members to make some adjustments to efficiently progress toward task completion.

Thus, by monitoring their performance and their environment, team members may realize that they will not be able to reach their work-related goals for different reasons, such as a faulty plan, lack of resources, or internal or external changes (Kozlowski et al., 1999). The capacity of team members to face these performance demands is called team adaptability (Bowers et al., 1993; Cannon-Bowers et al., 1995; Salas et al., 2005). This process of adaptation may involve nonteamwork behaviors or teamwork behaviors (Cannon-Bowers et al., 1995; Goodman, Devadas, & Griffith Hughson, 1988). The nonteamwork behaviors imply, for example, increasing effort in task work behaviors and getting additional resources. Teamwork behaviors include those previously discussed, for example, changing the goals, improving the quality of the plan, and increasing coordination. Moreover, to adjust to unexpected performance demands, team members may show team adjustment behaviors. Based on a conceptual analysis of previous frameworks, the integrative framework proposed in this article includes four behavioral dimensions of team adjustment behaviors, namely, backing-up behaviors, intrateam coaching, collaborative problem solving, and team practice innovation.

Backing-up behaviors refers to "the extent to which team members help each other perform their roles" (Porter et al., 2003, p. 396). This dimension implies the provision of tangible task-related help when a team member is failing to reach the goals as defined by his or her role (Salas et al., 2005). Team members may provide different forms of back up, such as helping someone who is behind in his or her work complete a task, filling in for a team member who is unable to fulfill his or her role, helping a fellow team member correct performance-related mistakes, and providing resources or supplies (Marks et al., 2001; Porter et al., 2003). These behaviors are shown on a discretionary basis because they do not appear in job descriptions and they are not planned for or assigned as requirements of the job (George & Brief, 1992). The provision of backing-up behaviors implies that team members have the time, resources, and capacity to help their teammates who are unable to meet the demands. At the conceptual level, this dimension is similar to helping behavior (Janz et al., 1997) and supporting behavior (Smith-Jentsch et al., 1998). It should be noted that the boundary between backing-up behaviors and cooperation is not always clear in the reviewed frameworks. Some authors consider these two concepts to be equivalent (e.g., Hoegl & Gemuenden, 2001). However, cooperation is shown when team members work together (at the same time) to accomplish collective tasks, whereas backing-up behaviors are displayed when a team member helps another member to carry out his or her own tasks.

When, in the process of monitoring, team members recognize ineffective performance on the part of fellow teammates, they may provide feedback to these teammates to help improve their performance (McIntyre & Salas, 1995). In this view, intrateam coaching is defined as the exchange among team members of constructive feedback regarding the task accomplishment (Cannon-Bowers et al., 1995; McIntyre & Salas, 1995; Rasker, Post, & Schraagen, 2000). This dimension allows team members to learn from each other to improve their performance. Team members may coach their teammates by providing advice, suggestions, guidance, and instructions, by calling attention to a potential error, and by confronting members who break norms (Druskat & Kayes, 1998; Rasker et al., 2000). To be effective, they should be open to receiving this type of retroaction from their fellow members. Morgan et al. (1986) referred to this process as "giving suggestions or criticisms" and "acceptance of suggestions or criticisms." Intrateam coaching includes the notion of feedback (e.g., Cannon-Bowers et al., 1995; McIntyre & Dickinson, 1992). Some authors, such as Marks et al. (2001), consider the monitoring of performance and the provision of feedback (intrateam coaching) as a single dimension of teamwork behaviors. Though these two behavioral dimensions are highly interrelated, they assume two distinct functions according to the action regulation theory. Indeed, performance monitoring enables team members to collect performance information (evaluation function), whereas intrateam coaching helps them to improve a bad performance by giving constructive feedback to one another (adjustment function).

As team members progress in their tasks, they may encounter technical difficulties that interfere with task accomplishment, such as equipment failures and outdated work procedures (Tesluk & Mathieu, 1999). To get through this situation, team members may engage in collaborative problem solving, which means that they collectively find and implement a solution that brings actual conditions closer to the desired conditions (McGrath, 1991; Wilczenski, Bontrager, Ventrone, & Correia, 2001). The resolution of a problem involves gathering and integrating information related to the problem, identifying alternatives, selecting the best solution, and implementing the solution (Stevens & Campion, 1994). The notion of decision making used by Bowers et al. (1993), Cannon-Bowers et al. (1995), C. Prince and Salas (1993), and Tannenbaum et al. (1992) is included in collaborative problem solving because the latter implies that team members make a decision to resolve a problem. Likewise, the notion of voice, defined as the extent to which team members speak up and offer

constructive suggestions for change (Erez et al., 2002), could be included in the process of problem solving. The collaborative aspect of problem solving means that all team members are actively engaged in working toward a solution to the problem (Wilczenski et al., 2001). By working together to resolve a problem, team members contribute multiple perspectives that are likely to improve the diagnosis of the situation, the range of solutions considered, and the likelihood that incorrect solutions will be differentiated from correct ones (Stevens & Campion, 1994). Moreover, collaborative problem solving may enable team members to build on one another's ideas to construct understandings they did not have prior to the collaborative experience. Levine and Moreland (1998) noted some problems that can plague group decision making and collaborative problem solving, such as groupthink (defined as an extreme drive toward unanimity that produces poor group decisions), group polarization (defined as the tendency of individuals' opinions to be more extreme after discussion than before), and risky shift (defined as the propensity to make risky decisions). Thus, an effective process of collaborative problem solving implies that team members are aware of these constraints and use appropriate interventions for overcoming them to find optimum solutions to problems (Wittenbaum et al., 2004).

Team members may encounter situations that require new and better ways of doing things. In other words, they may have to innovate and come up with new practices that address changing task demands to maintain or increase their performance (Spreitzer, Noble, Mishra, & Cooke, 1999). The behavioral dimension associated with this process is team practice innovation, which is defined as the team members' activities designed to invent and implement new and improved ways of doing their tasks (Cohen et al., 1996). This dimension has also been called "innovation process" (Cohen et al., 1996) and "innovating" (Janz et al., 1997). Team members are likely to be innovative in their practice when they take the time needed, work together, and share resources to develop and apply new ideas and proposals (Anderson & West, 1998; Drach-Zahavy & Somech, 2001). By facilitating the introduction of new working methods, team members make it possible for the team to react more adequately to the changing requirements of the tasks and, consequently, to be more effective (Cohen et al., 1996; Janz et al., 1997). When team members work in a dynamic environment, task accomplishment may require continuous improvement, which means that they need to continuously refine and improve the way they are doing the work (Kozlowski et al., 1999).

Management of Team Maintenance

Some personal or interpersonal issues can endanger the maintenance of the team, for instance, personal difficulties experienced by team members and conflicts among team members (Kozlowski et al., 1999; Tesluk & Mathieu, 1999). Moreover, these difficulties may prevent team members from fully contributing to task accomplishment or from effectively regulating team performance. Teams cannot operate efficiently when team maintenance is jeopardized (Stogdill, 1959). Thus, effective management of team maintenance enables team members to deal with these difficulties, which can emerge throughout the team's existence. The teamwork behaviors associated with management of team maintenance are psychological support and integrative conflict management.

Psychological support. When team members experience personal difficulties, such as failure, temporal stress, and job security concerns, their fellow members may provide active support to help them overcome these difficulties (Rosenfeld & Richman, 1997). Psychological support may be defined as the voluntary assistance that team members provide to reinforce the sense of well-being of their teammates. This dimension is tied to motivating or confidence building (Marks et al., 2001), team spirit and morale (Morgan et al., 1986), affect management (Marks et al., 2001), supportiveness (Gladstein, 1984), and emotional and appraisal forms of social support (Campion et al., 1993). Psychological support may take many forms, such as talking over a personal problem, showing care and consideration for others, providing encouragement, and valuing team members' talents, competencies, and task contributions (Cohen & Wills, 1985; Rosenfeld & Richman, 1997). Support among team members involves that they feel comfortable to ask for help when needed rather than struggling. Psychological support is likely to help team members to effectively cope with the different factors that can lessen their will to contribute to task accomplishment. It may also provide incentive to team members to perform better and to maintain high performance levels (Marks et al., 2001; Weldon & Weingart, 1993). Indeed, psychological support gives rise to positive feelings about self-worth, self-efficacy or competency, identity, and relatedness to other team members (Cohen & Wills, 1985; House, 1981).

Integrative conflict management. The emergence of intrateam conflicts is almost inevitable because work teams bring together individuals from different backgrounds and with different value systems to accomplish

collective tasks (Jehn, 1997; Stevens & Campion, 1994). Jehn's (1997) study shows that intrateam conflicts can concern task (the content and the goals of the work), process (how tasks will be accomplished), and interpersonal issues (the relationship between team members). Although some conflicts can lead to beneficial changes for members, they prove to be harmful for the team when they are not managed adequately by team members and when they persist within the team (Levine & Moreland, 1998; Tjosvold, 1998). Integrative conflict management refers to the integration of team members' interests while resolving disagreements and friction among team members (Janssen, Van de Vliert, & Veenstra, 1999). By working together to resolve their conflicts, team members may succeed in integrating their interests. From this perspective, the resolution of conflicts implies that team members work through disagreements among themselves; otherwise team members may continue to compete against one another's interests or perspectives (Spreitzer et al., 1999). In other words, integrative conflict management involves taking the interests of the different parties into consideration when an agreement is made (Janssen et al., 1999). An integration of different perspectives is likely to foster good team decisions regarding conflicts and enables team members to focus on task accomplishment instead of fighting (Alper, Tjosvold, & Law, 2000; Yeatts & Hyten, 1998).

Summary of the Integrative Framework of Teamwork Behaviors and Temporal Considerations

The integrative framework proposed in this article represents a conceptual structure of team members' overt actions that facilitate collective task accomplishment. The behavioral dimensions of teamwork behaviors are arranged in a hierarchy. Taking into account the functional perspective, the higher level categories are the regulation of team performance and the management of team maintenance. The first is divided into four subcategories, each containing more specific behavioral dimensions, namely the preparation of task accomplishment (team mission analysis, goal specification, and planning), task-collaborative behaviors (coordination, cooperation, and information exchange), work assessment behaviors (performance monitoring and systems monitoring), and team adjustment behaviors (backing-up behaviors, intrateam coaching, collaborative problem solving, and team practice innovation).

These four subcategories are based on the functions identified in the action regulation theory (Frese & Zapf, 1994). This theoretical approach also helps to specify the optimal timing of these teamwork behaviors (see

Figure 2
Schematic Representation of the Links Among Subcategories of the Regulation of Team Performance

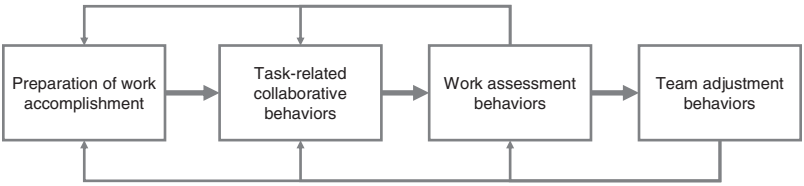


Figure 2). Indeed, as proposed by the action regulation theory, task accomplishment may be optimized by assuming the functions of preparation, execution, evaluation, and adjustment in a sequential way. These functions can also be considered as cyclical phases that are repeated throughout the attainment of a task-related goal. Specifically, after engaging in work assessment behaviors, team members may prepare the accomplishment of other subtasks, pursue task execution, or make some adjustments. Likewise, team adjustment behaviors may lead to preparation of work accomplishment, task-related collaborative behaviors, or work assessment behaviors. In addition, taking into account that team members often work on multiple goals over time (Marks et al., 2001; McGrath, 1991), this pattern of functions may be performed with regard to each task-related goal.

According to Tschan (2002), incomplete cycles of action regulation are likely to impede team performance. For example, if a cycle is confined to preparation, a planned behavior may never be carried out. Similarly, if a cycle lacks adequate preparation, the action may have to be repeated or modified, possibly several times. Behaviors that are out of sequence are also problematic because the task is not accomplished as well as it could be (Tschan, 1995). However, team members may partially deviate from the sequence illustrated in Figure 2 and can manage nevertheless to achieve their goals. For instance, instead of completing the plan entirely before starting to work, they can determine the first acts to be performed, perform those acts, and determine the remainder of the plan while working on the task (Weingart, 1992).

The second higher level category, the management of team maintenance, includes psychological support and integrative conflict management. These behaviors tend to be shown by team members when the team has to cope

with situations that can jeopardize the team's social stability. These situations can occur at any time throughout the team's existence. To preserve the team as a whole and to make sure that every member contributes fully to task accomplishment, team members can manage these situations by providing psychological support and by engaging in integrative conflict management.

Teamwork Behaviors and Task Design

The framework of teamwork behaviors proposed in this article is designed to be generalized across diverse team-based organizational settings. These behaviors enable team members to work effectively with one another to achieve collective tasks and, consequently, enhance team performance. However, the relevance of these behaviors to improve team performance may vary as a function of different components of task design, namely task interdependence, task complexity (i.e., task scope and task structure), and collective autonomy. First, the intended effect of teamwork behaviors may be moderated by the level of task interdependence (Gladstein, 1984). Task interdependence refers to the extent to which the work-flow arrangements demand that individuals interact to get the job done (Thompson, 1967). Task interdependence is a characteristic of the structure of work flow because it describes the relationships among team members (Wageman, 1995; Weldon & Weingart, 1993). At the lower level of task interdependence, team members do not need to interact to a great extent with one another to integrate their task contributions (Kozlowski et al., 1999; Tesluk et al., 1997). Each individual contributes incrementally to overall task completion and, hence, to team performance. Thus, the performance of the team corresponds to the sum of the individual performances. This is not to say that team members are not interdependent. Indeed, if one individual's work begins to drag behind that of others, the teammates will have to increase their efforts to compensate for the loss. Nevertheless, when the level of task interdependence is low, team members do not really need to interact with their teammates to attain their goals, and, consequently, teamwork behaviors are required to a lesser extent. At the higher level of task interdependence, the work arrangements require that team members work together closely to accomplish the task (Tesluk et al., 1997; Wageman, 1995). Moreover, the work and activities flow among team members in a back and forth manner during a period (Van de Ven, Delbecq, & Koenig, 1976). Each team member has to contribute to the collective tasks because the withdrawal of

anyone in the team may jeopardize the team's success. In this case, team performance is a function of more complex combinations of team members' inputs. When the level of task interdependence is high, teamwork behaviors are likely to improve team performance because task accomplishment requires interaction among team members (Kozlowski & Bell, 2003). Overall, a high level of task interdependence may increase the efficacy of teamwork behaviors, in terms of regulation of team performance and management of team maintenance, to enhance team performance.

Second, the effects of teamwork behaviors may depend on task complexity and, more specifically, on task scope and task structure (Devine, 2002; Rothrock, Harvey, & Burns, 2005). Task scope refers to the extent to which the team task may be divided into several subtasks, such as generating ideas, designing new products, making decisions, executing technical activities, and solving work-flow problems (Rothrock et al., 2005). Thus, a high level of task scope involves several distinct acts that necessitate different competencies (Wood, 1986). Indeed, to handle and piece together every component of the task, team members need to adopt diverse teamwork behaviors (Man & Lam, 2003). In contrast, a low level of task scope has few interconnected subparts. In this situation, work accomplishment requires only some teamwork behaviors. For instance, in organizational settings, some types of work teams, such as parallel teams (Cohen & Bailey, 1997) and advisory teams (Devine, 2002), have a narrow number of subtasks to accomplish (e.g., diagnose problems, make a specific decision, or suggest solutions). Thus, collaborative problem solving is likely the main dimension of teamwork behaviors that could improve the performance of these teams.

The capacity of teamwork behaviors to facilitate the attainment of work-related team goals also depends on task structure, which is defined as the extent to which members actions relate to outputs in an understandable and predictable fashion (Devine, 2002). When the task is unstructured, ambiguity remains concerning how to attain expected outcomes (Man & Lam, 2003). In this situation, preparation of work accomplishment and work assessment behaviors are particularly important to effectively progress toward task accomplishment (Salas et al., 2005). Team members may also make extensive use of coordination, information exchange, and adjustment behaviors to deal with unexpected performance demands that may arise in the course of carrying out their tasks (Devine, 2002; Man & Lam, 2003). At the opposite end of the spectrum, the accomplishment of a structured task is predetermined by standard operating procedures that reduce uncertainty (Man & Lam, 2003). When the task is highly structured, members know exactly what they have to do and when they have to do it to get the job done.

In this case, teamwork behaviors, especially preparation of work accomplishment and work assessment behaviors, are less likely to increase team performance.

Finally, the relevance of teamwork behaviors in team settings may vary as a function of the level of collective autonomy. According to Langfred (2000), collective autonomy (also called group autonomy) may be defined as "the amount of control and discretion the [team] is allowed in carrying out tasks assigned by the organization" (p. 567). In other words, it refers to the extent to which team members collectively assume managerial responsibilities (e.g., setting priorities, allocating work, assessing their progress and their performance). Collective autonomy can be conceptualized along a continuum (Hackman, 1987; Sundstrom et al., 1990). In hierarchical teams (or nonautonomous teams), members are supervised by a team leader and have almost no control over their work. The decisions are made by the immediate superior so that the role of team members is limited to task execution (Hackman, 2002). Specifically, the immediate superior is generally responsible for setting the goals, informing each member about the established plan, and monitoring team performance, though team members may be partially involved in these processes. In contrast, members of autonomous work teams have considerable latitude in deciding what tasks to perform and how to carry them out (Langfred, 2000). These teams are also called self-organizing teams, empowered teams, or self-management teams (Cohen et al., 1996; Guzzo & Dickson, 1996; Wall, Kemp, Jackson, & Clegg, 1986). Team members with more autonomy are given increased freedom to set work-related goals, prepare work accomplishment, monitor work progress and their environment, and make adjustments when needed (Cooney, 2004; Hackman, 2002; Stewart, 2006). In other words, members of autonomous teams need to adopt a wider variety of teamwork behaviors to increase their performance as compared to members of hierarchical teams.

In sum, task design serves to specify the requisite behaviors and processes that lead to effective team performance (Cannon-Bowers et al., 1995). Specifically, the level of task interdependence, task complexity, and collective autonomy indicates the extent to which the task requires teamwork behaviors to be accomplished successfully.

Future Research and Conclusion

In the coming years, some issues will need to be studied further to better understand teamwork behaviors. The main directions for future research

concern the conceptual structure, the timing, and the task conditions of teamwork behaviors. In the integrative framework, the behavioral dimensions are nested in a hierarchical conceptual structure. The hierarchical nature of this framework allows for a trade-off between comprehensiveness and parsimony. In other words, this framework helps to capture the complexity and the diversity of teamwork behaviors while retaining a relatively simple structure. To verify the conceptual structure of teamwork behaviors, there is a need to develop a valid and reliable measure of this construct. Some researchers, such as Hoegl and Gemuenden (2001) and Taggar and Brown (2001), have provided useful insight about the structure of teamwork behaviors. However, they did not take account of all of the dimensions relevant to teamwork behaviors. Thus, more information about the structure of teamwork behaviors should help to identify relatively independent dimensions. Future empirical research is required to determine whether the hierarchical conceptual structure proposed in this article is appropriate and parsimonious enough to represent teamwork behaviors. In other words, future research will make it possible to corroborate the basic, underlying dimensions of teamwork behaviors.

The framework presented in this article considers the timing of the behavioral dimensions and not just the dimensions themselves. As noted by A. Prince et al. (1997), timing considerations allow specifying when a behavior may have the desired effect. In terms of the regulation of team performance, the behavioral dimensions are connected to four cyclical phases, namely preparation, execution, evaluation, and adjustment. This pattern enables team members to optimize the intended effects of their teamwork behaviors to effectively complete their tasks. As for the management of team maintenance, the dimensions included in this higher level category are effective when team members encounter personal difficulties or interpersonal frictions, which may jeopardize stability of work teams. These situations may occur anytime during the team's existence. Future research should take into account the pattern and sequencing of behaviors and be based on longitudinal design to further knowledge regarding the timing of teamwork behaviors.

As conceptualized in this article, teamwork behaviors can facilitate the accomplishment of collective tasks and, consequently, enhance team performance. However, the importance of these behaviors in team settings is likely to vary as a function of the level of task interdependence, task complexity, and collective autonomy. Though many authors discuss the moderating effect of task design (e.g., Gladstein, 1984; Tesluk et al., 1997), there are relatively few studies on this issue (Stock, 2004).

Empirical research is needed to further increase the understanding of the influence of task design characteristics on the relationships between teamwork behaviors and team performance. Moreover, to verify the role of task design, future research should be conducted in different organizational settings because task design variance may be restricted in specific companies.

In sum, the main goals of this article were to review the existing literature on teamwork behaviors and integrate the various frameworks found. Although teamwork behaviors have been extensively studied, the literature review points out the lack of consensus among theoreticians and researchers concerning the conceptualization of teamwork behaviors, which may lessen consistency and comparability among studies. To clarify this body of knowledge, the primary contribution of this article is to provide an integrative framework of teamwork behaviors that makes it possible to reconcile the discrepancies between the previous works. Moreover, the integrative framework proposed in this article takes into account temporal considerations of the behaviors, which enhances our understanding of how a team gets from here to there. By developing a better representation of teamwork behaviors, it will become possible to better understand the way in which members can contribute to the success of their team. Thus, this article provides a comprehensive understanding of teamwork behaviors based on a classification of overt behaviors displayed during interactions among team members. The proposed framework is likely not only to improve clarity in research but also to result in useful intervention or practices. Indeed, the definition of effective teamwork behaviors may affect the choice of selection, training, appraisal, and rewards strategies. Thus, an understanding of the specific behaviors associated with effective team performance can help practitioners to better diagnose teams' problems and develop appropriate interventions.

Note

1. This approach based on required behaviors for effective performance should be distinguished from the approach based on behaviors enacted by team members. The latter consists in classifying members' utterances during face-to-face meetings into various categories. Thus, the unit of interest is each single act or input of a group member. This approach is represented by the classical works of Bales (1950), Bales and Cohen (1979), Morris (1966), and Futoran, Kelly, and McGrath (1989). For instance, Bales defines 12 categories of utterance (e.g., showing solidarity, showing antagonism, giving suggestion, and asking for suggestion) that can be grouped into two areas, namely the socioemotional area and the task area. These coding systems are very helpful for describing team members' actions in team (group) settings.

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