The Impact of Team Learning Behaviors on Team Innovative Work Behavior: A Systematic Review

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Abstract

The aim of this review was to get insight into the impact of learning behaviors on innovative behavior in work teams. We addressed this issue by carrying out a systematic literature review. Thirty-one articles that reported studies on learning and innovation development in work teams were included in the review. By integrating the correlational findings of the original studies, we found that, at large, all investigated team learning behaviors had an effect on aspects of team innovative work behavior. Concerning specific team learning behaviors, sharing, team reflection, and team activity had the strongest impact on teams' engagement in innovation development. A central conclusion is that learning and innovation development are mutually dependent aspects of teamwork and that fostering one aspect will also be beneficial for the other. Based on our findings, we draw practical implications for fostering team development through enhancing learning behaviors and innovative work behavior in teams.

Keywords

team development, innovative work behavior, innovation, creativity, team learning

Innovations at work are a crucial means for organizations to cope with increasing customer expectations, competition, and market dynamics (Anderson, Potočnik, & Zhou, 2014; Fay, Shippton, West, & Patterson, 2015; Subramaniam & Youndt, 2005).

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Innovations encompass all products and processes that are new and beneficial for an organization or a particular (group of) employees by providing an adequate solution for challenging tasks or situations (Messmann & Mulder, 2012). Innovations not only enable organizations to attain external benefits but are also a means to secure efficient internal processes that are the basis for organizational production processes or the provision of services. For employees, who are a key element of an organization's internal functioning, innovations are beneficial because they allow more effective work processes (e.g., improved communication processes at work), improved work conditions, and increased job satisfaction and other aspects of well-being (Anderson, De Dreu, & Nijstad, 2004; Janssen, 2000; Kanter, 1988). Moreover, innovations are not only a crucial outcome but, more importantly, include a dynamic, developmental process that has major implications for the professional development of employees (Evers, Kreijns, Van der Heijden, & Gerrichhauzen, 2011; Messmann & Mulder, 2012).

Although innovations provide advantages for organizations and for their employees, the focus of practitioners and researchers was mainly on the return on investment of innovations. By contrast, the process of the development of innovations and, more importantly, the role of employees' contributions in this process has been largely neglected (Crossan & Apaydin, 2010). Only in recent years, there was a substantial increase in studies that were devoted to processes of "individual innovation" and thus highlight that organizations increasingly need their employees to actively contribute to innovation processes (e.g., Bunce & West, 1995; Scott & Bruce, 1994). Focusing on such innovative work behavior, this line of research therefore investigated the exploration of opportunities for innovation and the subsequent generation, promotion, and realization of innovative ideas by individual employees (Hammond, Neff, Farr, Schwall, & Zhao, 2011).

Although this research shed light on the crucial role of employees' contributions to innovation development, it neglected the social nature of innovation processes. That is, innovation development is an interactive process that involves multiple actors with numerous responsibilities who interact to share their problems and ideas, who come up with strategies for realizing their ideas, and who discuss their experiences with prototypes of the innovation in practice (Kanter, 1988; Van der Vegt & Janssen, 2003). Accordingly, to enhance innovation processes, more insight needs to be gained into the dynamics of these social processes that then can be used in organizations to foster the development of innovations (Dyer & Nobeoka, 2000; Singh, 2005).

A crucial fact to take into account in this respect is that numerous organizations have adopted work teams as an organizational structure which, if implemented properly, enables efficient work processes (Fay et al., 2015). With respect to the social nature of innovation processes, teams may be expected to contribute to the development of innovations. In a further instance, teams may also be used as a strategic instrument to enable the development of innovations, as teams provide the benefit of accumulating a greater diversity of knowledge and larger information processing capacities (Müller, Herbig, & Petrovic, 2009). Addressing different types of human resource development, Garavan, McGuire, and Lee (2015) refer to this particular form of development as "networked development," which focuses on organizational units,

such as teams, that are deliberately formed to achieve specific goals and whose own dynamic development represents a valuable organizational outcome.

However, with few exceptions (e.g., Van der Vegt & Janssen, 2003), existing studies on innovative work behavior (see Hammond et al., 2011 for an overview) neglected teams and, more generally, the group level, as unit of analysis.

Bringing together the pivotal role of social interactions for innovation development and the importance of teams as an organizational structure, it is inevitable to gain more insight into team innovative work behavior (TIWB), that is, into interdependencies among individual team members' contributions to innovation development (Vangriegken, Dochy, Raes, & Kyndt, 2015).

Moreover, while research on innovation and innovative work behavior (Hammond et al., 2011) dealt intensively with individual determinants and environmental factors, the role of behavioral antecedents, such as reflection during daily work (Messmann & Mulder, 2015), were hardly taken into account. With respect to TIWB, an unanswered question therefore is which behaviors that teams engage in during their everyday work enable them to come up with innovative solutions when necessary. In this respect, models of team learning (e.g., Decuyper, Dochy, & Van den Bossche, 2010) describe different team learning behaviors (TLB) that teams have to engage in to attain a high quality of team interactions. With team learning, we mean a set of behaviors that members of teams engage in and which create outcomes for the whole team (e.g., shared goals), the team members (e.g., competencies), and the wider organizational context (e.g., products). Unfortunately, hardly any studies investigated relationships between TLB and behaviors leading to innovative outcomes (IOs) of teams (e.g., new procedures or products). Thus, bringing together learning behaviors in teams, such as reflection, and innovative work behavior closes the gap of missing insight into the role of learning activities at work for fostering the accomplishment of requirements for the development of innovations (Messmann & Mulder, 2012).

Based on the above considerations about the pivotal role of individual contributions to innovation development, the social nature of innovation processes, and the important role of work teams as organizational units involved in innovation processes, our research question is

Research Question: What is the impact of TLB on TIWB?

By answering this question, we will be able to derive practical implications for employees, teams, supervisors, practitioners in human resources, and managers regarding learning behaviors of teams and thus the development of teams, such as exchanging information and reflecting on goals, which have to be fostered to increase teams' contributions to innovation development.

To address this research question, we conducted a systematic review of research studies on the topic. In the following sections, we will first provide a theoretical conceptualization of TIWB and TLB, allowing for a broad integration of studies relating to these two constructs. Second, we explain in detail our method of identifying, selecting, and integrating appropriate studies. Subsequently, we present relevant findings for

answering our research question. Finally, we discuss our findings, critically reflect on our approach, and draw implications for research and practice.

TIWB

In this section, we conceptualize TIWB by taking a look at individual contributions to processes of innovation development of employees belonging to the same work team. That is, the focus is on innovation processes that originate from (but are not limited to) work teams that take core responsibilities in these processes. In our conceptualization of TIWB, we build on Messmann and Mulder's (2012) operationalization of individual innovative work behavior. After having looked at specific dimensions of TIWB, we will discuss implications of the social nature of innovation processes concerning interdependencies among individual team members' contributions to innovation development.

Conceptualizing TIWB

Based on models of creativity and innovation (Amabile, 1996; West, 2002), processes of innovation development incorporate both the creation and the implementation of innovative ideas. More specifically, innovation processes contain several interdependent innovation tasks that represent requirements, such as idea generation, that have to be accomplished to successfully develop IOs (Kanter, 1988). These requirements depend on each other but do not necessarily follow a linear order. That is, innovation development does not take place as an orderly process but rather as an intuitive and chaotic process with interconnections among different requirements (Lubart, 2001; Marinova & Phillimore, 2003).

To accomplish these different requirements for the development of an innovation, employees have to engage in various physical and cognitive work activities. It is however important to take into account that these work activities do not follow a specific order. Employees rather select the most appropriate work activities for accomplishing the requirements in the process of innovation development based on current situational and contextual demands. In addition, in the context of a work team, the responsibilities for carrying out the necessary work activities may be divided among the different team members. In accordance with these considerations and our definition of innovation, we define TIWB as the sum of all physical and cognitive work activities teams carry out in their work context to attain the necessary requirements for the development of an innovation (cf. Messmann & Mulder, 2012). As a consequence of the complex nature of innovation processes, work teams that engage in innovation processes may be involved in the accomplishment of different requirements for innovation development at the same time (Scott & Bruce, 1994). Accordingly, if teams engage in TIWB, this may lead to innovative products or processes as an IO.

Our conceptualization of TIWB builds on the outlined conceptualization of individual innovative work behavior (Messmann & Mulder, 2012), which is based on organizational psychological models of innovation as a two-stage process: a creative

stage and an implementation stage (Amabile, 1996; West, 2002). In accordance with this conceptualization, TIWB contains contributions of teams to processes of innovation development, which may be categorized either as team creative behavior (TCB) or as team implementation behavior (TIB). TCB encompasses all contributions of teams that are related to opportunity exploration, such as identifying pressing problems and needs for change and improvement in the team context or the wider organizational context. TCB furthermore includes activities related to idea generation such as identifying starting points and possible solutions that address existing opportunities for innovation. TIB contains contributions of teams that are related to idea promotion such as dividing responsibilities within the work team and acquiring supporters and sponsors of the envisioned innovation outside the team. TIB moreover refers to activities related to idea realization such as making experiences with an intellectual or material prototype in work practice and refining the IO for routine use.

The Social Nature of Innovation Development in Teams

Because the development of an innovation is a complex process that requires the accomplishment of several interdependent requirements, the involvement of more than just one employee is inevitable. Accordingly, attaining the different requirements for innovation development demands social interaction (Messmann & Mulder, 2012). That is, by involving the perspectives of different persons, there is a greater chance that opportunities for innovation are identified, that adequate ideas are generated, or that outcomes are adjusted based on experiences with a prototypical innovation. Likewise, the promotion of innovative ideas by building a coalition of supporters and sponsors is an inextricably social task.

In a further instance, compared with innovative work behavior of interacting individuals, TIWB is even more socially interactive as persons who belong to the same work team are more readily and frequently available for interactions. Also, in work teams different responsibilities in the innovation process may be more clearly distributed. Therefore, task and goal interdependence among persons involved in the innovation process may be more pronounced and team members may expect more commitment for each other's responsibilities. TIWB therefore represents a special case of innovative work behavior with more coordinated activities and, consequently, a potentially accelerated process of innovation development.

Work teams are, however, not necessarily more innovative than individual employees who more loosely interact toward the goal of innovation development. In both cases, the joint involvement in a process of innovation development requires a great deal of explicit or implicit coordination. If the frequency of interaction and the level of interdependence are increased, as it is the case in work teams, coordination mechanisms are even more crucial (Müller et al., 2009). Therefore, in order for work teams to make use of their organizational advantage, they need to engage in team behaviors that support the creation of a joint goal concerning an (envisioned or ongoing) innovation process, the establishment of a common understanding of the relevance of a particular innovation, and the distribution of responsibilities for different tasks during the

innovation process. Such behaviors are described in models of team learning (e.g., Decuyper et al., 2010), which describe different interdependent behaviors in teams that enable effective teamwork.

TLB

In this section, we describe the basic characteristics of a systemic and integrative model of team learning (Decuyper et al., 2010), which is based on general systems theory and complexity theory and which combines both cognitive and socio-cultural perspectives on team learning (Akkerman et al., 2007). From this theoretical perspective, teams are considered as complex open systems that interconnect team members to each other and to their environment. This model integrates a set of TLB that are required for effective teamwork performance. Social interactions are at the heart of team learning because they enable teams to develop a common understanding of work tasks, individual responsibilities, and the team's role within the organization. Thus, teams constitute a connecting element between individual employees and their organization (Nooteboom, 2002).

In accordance with Decuyper et al. (2010), team learning is defined as a set of dynamic communication and facilitation processes that are fed by inputs at the individual, team, and organizational level, which lead to change and improvement as outputs at these three levels, and through which emergent team states (e.g., shared mental models) are evolving and progressing constantly. It is important to take into account that team learning processes and the corresponding inputs, outputs, and emergent states are not linked in a linear fashion. Furthermore, team learning processes are dynamic because emergent team states not only result from team learning processes but at the same time represent the basis for subsequent team learning processes (Arrow & Cook, 2008; Bell, Kozlowski, & Blawath, 2012; Decuyper et al., 2010; Stagl, Salas, & Day, 2008).

Furthermore, in accordance with socio-cultural theories (Billett, 2006; Vygotsky, 1978), the integrative model of team learning emphasizes the importance of team members' interactions for employees' learning and professional development. That is, through engaging in TLB, individual team members are enabled to improve their competencies.

In summary, models of team learning provide a networked perspective on human resource development (Garavan et al., 2015) that highlights how teams as a specific kind of organizational unit evolve and how the development of teams as "work units," on one hand, and the accomplishment of organizational tasks, on the other hand, are dynamic and inextricably related processes. Conceptually, such models are based on the assumption that TLB lead to the formation of shared mental models that provide a basis for high quality team interactions. Shared mental models represent overlapping mental representations of team members' knowledge (Van den Bossche, Gijselaers, Segers, Woltjer, & Kirschner, 2011) such as a joint understanding of team goals, of different team tasks, and of the distribution of responsibilities in the team (Decuyper et al., 2010).

Decuyper et al.'s (2010) integrative model of team learning contains seven different behavioral dimensions. The model encompasses three communicative behaviors that determine the power of team learning (e.g., how effective or efficient teams work). *Sharing* represents the most fundamental communicative behavior and refers to the exchange of knowledge and opinions among team members to create a joint knowledge base. *Co-construction* builds on sharing and refers to the creation of shared meaning (e.g., of goals, tasks, responsibilities, materials, information), which may represent a new or more elaborated meaning compared with the original individual representations. *Constructive conflict* is similar to co-construction in that it involves an integration of different individual perspectives. However, constructive conflict is characterized by negotiating diverse or even contradictory meanings and by striving toward an agreement or compromise beyond team members' comfort zone. It is important to note, however, that all three communicative behaviors co-exist in practice and that although sharing information is the basis, teams have to face the challenge of balancing co-construction and constructive conflict.

In addition to these communicative behaviors, Decuyper et al.'s (2010) model contains four facilitating behaviors, which allow teams to create a specific focus, decide upon strategies, develop routines, and become visible within and beyond their organization. *Team reflection* refers to the adjustment and refinement of a team's current joint understanding of the team goals, tasks, and situations as well as to the examination of internal processes (e.g., communicative behaviors), methods, and strategies. *Team activity* refers to behaviors involved in the process of teams working toward the attainment of work goals. Considered as a component of team learning, team activity represents an implicit mode of learning by doing through which teams develop a tacit understanding of their tasks and how these are approached competently. With increasing engagement in activities related to assigned work tasks, teams develop routines that enable them to accomplish their tasks more efficiently. *Boundary crossing* involves the communication of a team (e.g., in meetings) with its environment, which includes (members of) other teams, supervisors, other organizational members (e.g., practitioners in human resources, managers) as well as (members of) other organizations. Boundary crossing enables teams to retrieve information from outside, disseminate their own outcomes and thus enhance the team's visibility and power within and beyond the organization. In addition, by managing and crossing their boundaries, teams are able to develop an identity as a team and to improve or develop their own concepts, strategies, and solutions for team tasks (Akkerman & Bakker, 2011). *Storage and retrieval* refers to behaviors that teams engage in with the intention of making outcomes of teamwork, such as ideas, plans, descriptions, or decisions, persistent. That is, by storing the outcomes of activities (e.g., in a file, through communication) the outcomes become visible for the team and for others. In addition, through storing outcomes of teamwork they can be retrieved as a starting point for continuing with the same activities or for enhancing related activities.

In our conceptualization of TIWB, we depicted TCB and TIB as interdependent behaviors that teams have to engage in to develop an IO. In our conceptualization of TLB, we outlined the communicative behaviors *sharing*, *co-construction*, and

constructive conflict as well as the facilitating behaviors *team reflection*, *team activity*, *boundary crossing*, and *storage and retrieval*. In the next section, we will take a look at how TLB enhance TIWB and thus outline how the development of innovations in and by work teams can be fostered.

TIWB and TLB

Based on the consideration that work teams have a potential organizational advantage when it comes to complex tasks, such as developing an innovation, we argued that TLB are necessary to enable effective teamwork and thus to activate the organizational advantage of teams. Several scholars emphasize that TLB are a key factor for fostering processes of innovation development (Awang, Sapie, Hussain, Ishak, & Yusof, 2014; Crossan, Lane, & White, 1999; Van den Bossche, Gijselaers, Segers, & Kirschner, 2006).

In accordance with research on the role of learning behaviors for IWB at the individual level (Messmann & Mulder, 2012, 2015), we distinguish between innovation-specific TLB taking place in immediate relation to an innovation process and TLB taking place during daily work.

The role of *innovation-specific TLB* as a factor for enhancing TIWB is created by the complexity of the processes of innovation development. As outlined above, this complexity is caused by the scope and the interconnections among different requirements for innovation development and corresponding individual contributions. Accordingly, TLB are necessary to create a shared understanding of ideas, their relevance, different tasks and goals, and the distribution of responsibilities in the innovation process. Once a shared understanding of the innovation is established, TLB directly enhance different team behaviors related to accomplishing the requirements for innovation development by enabling an efficient distribution of responsibilities. In addition, by having diverse knowledge bases and multiple perspectives readily available, attaining the requirements for innovation development, such as the generation of appropriate ideas or the identification of shortcomings of a prototype, becomes easier and more effective. Likewise, through boundary crossing the diversity of ideas can be enriched by perspectives from outside.

TLB during daily work enable TIWB in a less straightforward sense. Based on the premise that TLB are crucial for efficient teamwork, the frequent engagement in TLB characterizes a healthy team that is well prepared for tackling complex tasks. Messmann and Mulder (2015) argued that employees who engage in reflection as a work-related learning behavior develop a higher amount of flexibility which, in turn, allows them to adapt to novel, ambiguous, or unexpected situations and tasks more easily. This effect is grounded in theories of experiential learning (Kolb, 1984; Kolodner, 1997), which argue that continuous reflection on experiences leads to more advanced and generalizable action plans (i.e., cognitive representations of appropriate solutions for tasks). With respect to TLB, this increased flexibility refers to the routinization of engaging in TLB such as co-construction, constructive conflict, or team reflection, which are essential for coping with challenges and which the team can draw

on in situations requiring an innovative approach. Finally, storing outcomes allows teams to reuse materials (e.g., concepts) as a starting point for tackling challenging tasks.

Method

Drawing on the theoretical dimensions of TIWB and TLB and their relationships developed so far, we conducted a systematic literature review to gain insight into the impact of TLB on TIWB. In this section, we will outline the methodological approach we applied to identify studies that contain evidence about the role of TLB as a factor for enhancing TIWB.

Search Strategy

For carrying out the literature search, the databases Web of Science, ProQuest Academic, and Psyndex were used. Search terms were derived from our theoretical conceptualizations of TIWB and TLB. Regarding TIWB, we used the terms "innovation," "creativity," "innovative (work) behavior," "creative behavior," and "implementation behavior" as well as "opportunity exploration," "idea generation," "idea promotion," and "idea realization." Similarly, concerning TLB, we used "learning," "behavior," "activity," and "process" as search terms.

To relate these search terms to the team level of analysis, we used each search term in combination with the terms "work team," "team," "work group," and "group." That is, in our search we used combinations such as "innovation" and "work team" or "learning" and "work group."

The literature search led to 416 hits for Web of Science, 2,607 hits for ProQuest Academic, and to 160 hits for Psyndex. Altogether, 27 studies matched our selection criteria (see below) and were therefore included in our literature review.

In a second step, the snowballing technique was applied to identify further studies. That is, we searched the reference lists of studies we had assessed as relevant for addressing our research question. In addition, we searched the publication lists of the authors of relevant studies identified in the literature search. This procedure led to the identification of five additional studies matching our selection criteria. Accordingly, at the end, 31 studies were included in our literature review.

Selection Criteria

To identify studies that were appropriate for addressing our research question as well as of good quality, we applied the following technical and content-related criteria:

Technical criteria. (a) Studies had to be of adequate methodological quality, which we ensured by using publication in peer-reviewed journals as a major criterion. Studies published in monographs were also acceptable after critical examination. However, our search process did not lead to any monographs matching our content-related

criteria (see below). Furthermore, (b) studies had to be field studies that examined natural work teams. Experimental studies were excluded as the transferability of results of these studies concerning the dynamics of processes in real work teams is low (Kozlowski & Ilgen, 2006). (c) Studies had to contain results based on analyses at team level. The corresponding data could either have been collected at team level or collected at individual level and aggregated at team level. (d) As we aimed to capture the complete state of the art concerning our research question, the publication year of studies was neglected.

Content-related criteria. (a) The sample of the studies had to consist of work teams that were formed to accomplish organizationally relevant tasks (Kozlowski & Bell, 2003). Studies with samples of student teams and ad hoc teams (i.e., formed for the purpose of the study) were excluded because student teams have different goal intentions and challenges they have to cope with, because both student and ad hoc teams do not have to perform organizationally relevant tasks, and because student teams often can choose tasks themselves, whereas tasks are often predefined in organizations (Fischl-mayr & Kepler, 2009). (b) Studies had to contain information about the relationship between at least one variable relating to (dimensions of) TIWB and at least one variable relating to (dimensions of) TLB. We also included studies that instead of a dimension of TIWB contained an IO as a consequence of TIWB (i.e., TIWB is a prerequisite for IOs). This procedure was also justified by the expected finding that only a limited number of studies analyzed relationships between (dimensions of) TIWB and TLB. Thus, this expansion allowed us to build a broader empirical basis for exploring our research question. (c) As both TIWB and TLB are behavioral concepts, at least 50% of the items within the scales measuring relevant variables in the studies had to refer to behavior (while the other half could, for instance, refer to outcomes of behavior).

Synthesizing Process

Following Rodgers et al. (2009), we conducted a narrative synthesis of relevant findings from the selected studies, allowing a categorization of the diverse variables found in the studies based on the theoretical dimensions of TIWB and TLB. Regarding TIWB, these analytical categories were the overall construct of *TIWB*, the corresponding sub-categories TCB and TIB as well as IO as a consequence of TIWB. Concerning TLB, the overall construct of TLB, the three communicative behaviors *sharing, co-construction*, and *constructive conflict* as well as the four facilitating behaviors *team reflection*, *team activity*, *boundary crossing*, and *storage and retrieval* were used as analytical categories. By carrying out this synthesizing process, we were able to systematically prepare the relevant results of the studies in a way that allows retrieving evidences about the relationship between TIWB and TLB both at the level of the theoretically derived categories of TIWB and TLB as well with respect to the specific variables and corresponding labels that were addressed in the single studies.

Table 1. Characteristics of the Studies.

Study characteristic	Number of studies
Publication year	
2010-2015	14
2005-2009	7
2000-2004	7
1990-1999	3
Domain	
High-tech	5
Health care	7
Education	3
Various	15
Origin of the study	
Europe	12
Asia	10
North America	1
Methodological paradigm	
Quantitative	24
Mixed-methods	7
Qualitative	0
Methodological design (quantitative)	
Cross-sectional	28
Longitudinal	3
Instrument	
Survey	23
Survey + Interview	7
Multiple sources	1

Note. $N = 31$. Information about domain, type of organizations, and origin of the study was not available for all studies.

Results

Characteristics of the Studies

An overview of the characteristics of the selected studies is depicted in Table 1. The selected studies were published between 1991 and 2015. Most studies were published between 2010 and 2015 (45.2%), followed by the periods between 2005 and 2009 (22.6%) and between 2000 and 2004 (22.6%), and the period between 1990 and 1999 (9.7%). In addition, since 2000, studies increasingly addressed the role of team behavior for innovation development rather than merely investigating IOs of innovation processes in teams. Concerning the investigated domains, 16.7% of the studies were carried out with teams in high-tech companies, 23.3% with health care teams, 10% with teacher teams, and 50% with teams from a variety of domains. Furthermore, the

majority of studies took place in Europe (52.2%) and Asia (43.5%) and only one study reported that was carried out in North America. Finally, regarding their methodology, 83.9% of the studies had a quantitative design and 16.1% had a mixed-methods design (in this case we used the quantitative results). By contrast, we found no qualitative studies on the subject. Concerning the quantitative analyses, 90.3% of the studies had a cross-sectional design, and 9.7% had a longitudinal design.

Effects of TLB on TIWB

In this section, we will present the categorized findings of the selected studies regarding effects of TLB on TIWB (Table 2). To make the results of the single studies as comparable as possible, we retrieved zero-order correlations at team level. For one study, which only contained correlations at individual level, we included the outcome of a regression analysis. Results are structured according to the dimensions of TLB and their effects on TIWB and its respective dimensions (i.e., TCB, TIB, IO).

TLB. A positive effect of TLB as an overall construct on TIB was reported by one study (Walter & Van der Vegt, 2013).

Sharing. All studies including this variable reported significantly positive effects of teams' engagement in sharing on TIWB, on TCB and TIB, and on IO. In addition, Bednall, Sanders, and Runhaar (2014) found an effect of sharing on TIWB at two points of measurement and Drach-Zahavy and Somech (2001) found positive effects of sharing on both member and supervisor-rated TIB.

Co-construction. While Vera and Crossan (2005) did not find an effect of co-construction on TCB, Van Woerkom and Croon (2009) found a positive effect of co-construction on member-rated TIB (but not on supervisor-rated TIB). Moreover, while Timmerman, Van Linge, Van Petegem, Van Rompaey, and Denekens (2013) found a positive effect of co-construction on various indicators of IO, Vera and Crossan (2005) did not find this effect.

Constructive conflict. In two studies on the effect of constructive conflict (operationalized as cooperative, competitive, and avoiding approach) on TIWB, one study (Chen, Liu, & Tjosvold, 2005) showed a positive effect of a cooperative approach and negative effects of a competitive and an avoiding approach on TIWB, while the second study (Tjosvold, Yu, & Wu, 2009) found no such effects. Concerning effects on TIB, in two studies (De Dreu, 2002; De Dreu & West, 2001) no effect of constructive conflict (operationalized as minority dissent) on TIB was found. By contrast, two further studies (Desivilya, Somech, & Lidgoster, 2010; Drach-Zahavy & Somech, 2001) found significantly positive effects of constructive conflict (operationalized as integrating and negotiating) on TIB. Likewise, three studies that investigated effects of constructive conflict on IO provided mixed evidence with some significant and some

Table 2. Effects of Team Learning Behaviors on Team Innovative Work Behavior.

Theoretical categories		Study variables					
TLB	TIWB	TLB	TIWB	Effect	N	Methodology	Study
TLB	TIB	Collective team-directed learning behavior	Team innovation	$B = .44*$ (SD = .20)	26	I, a, i	Walter and Van der Vegt (2013)
Sharing	TIWB	Knowledge sharing with colleagues	Innovative behavior	.24***/.42*** (t1/t2)	238	I, b, i	Bednall, Sanders, and Runhaar (2014)
	TCB	Knowledge sharing	Creativity	.24**	163	I, a, i	Zhang, Tsui, and Wang (2011)
		Team information exchange	Team creativity	.29**	100	I, a, i	Gong, Kim, Lee, and Zhu (2013)
	TIB	Exchanging information	Team innovation (member/supervisor rating)	.76***/.48**	48	I, a, i	Drach-Zahavy and Somech (2001)
	IO	Information exchange	Team innovation	.36*	21	2, a, i + ii	De Dreu (2006), Study I
		Exchanging information	Team innovation	.27**	224	I, a, i	Somech and Drach-Zahavy (2007)
Co-construction	TCB	Real-time information and communication	Improvisation	.22	38	I, b, i	Vera and Crossan (2005)
	TIB	Team information processing (member/supervisor rating)	Innovativeness	.69***/.18	88	I, a, i	Van Woerkom and Croon (2009)
	IO	Processing information	Knowledge of incremental innovation	.56*	30	I, a, i	Timmerman, Van Linge, Van Petegem, Van Rompaey, and Denekens (2013)
			Use of incremental innovation	.58*			
			Knowledge of radical innovation	.67**			
			Use of radical innovation	.56*			
		Real-time information and communication	Innovation	.06	38	I, b, i	Vera and Crossan (2005)

(continued)

Table 2. (continued)

Theoretical categories		Study variables					
TLB	TIWB	TLB	TIWB	Effect	N	Methodology	Study
Constructive conflict	TIWB	Cooperative approach	Innovation	.38**	105	1, a, i	Chen, Liu, and Tjosvold (2005)
		Competitive approach		-.26**			
		Avoiding approach		-.30**			
		Cooperative approach	Team's innovation	.07	100	1, a, i	Tjosvold, Yu, and Wu (2009)
		Competitive approach		-.02			
		Avoiding approach		-.08			
	TIB	Minority dissent	Team innovation	.22	32	1, a, i	De Dreu (2002)
		Minority dissent	Team innovation	-.09/.21 (Study 1/2)	21/28 (Study 1/2)	1, a, i/ 2, a, i + ii (Study 1/2)	De Dreu and West (2001)
		Integrating	Team innovation	.27*	77	1, a, i	Desivilya, Somech, and Lidgoster (2010)
		Negotiating	Team innovation (member/supervisor rating)	.51**/.55***	48	1, a, i	Drach-Zahavy and Somech (2001)
	IO	Ease of speaking up (interview/coders)	Procedure innovation Implementation success	.39/.33 .55*/.47*	16	2, a, i + ii	Edmondson (2003)
		Minority dissent	Number of innovation Radical innovations	.50** .28	36	2, a, i + ii	Nijstad, Berger-Selman, and De Dreu (2014)
		Negotiating	Team innovation	.14*	224	1, a, i	Somech and Drach-Zahavy (2007)
Team reflection	TIWB	Reflection on daily activities	Innovative behavior	.52***/.40*** (t1/t2)	238	1, b, i	Bednall et al. (2014)
		Task reflexivity	Innovation	.26*	100	1, a, i	Tjosvold, Tang, and West (2004)
	TCB	Team reflexivity	Team creativity	.44***	98	1, a, i	Shin (2014)
	TIB	Team reflection	Innovation	.20**/.18* (t1/t2)	246/198 (t1/t2)	1, b, i	Buljac-Samardzic and Van Woerkom (2015)
		Reflexivity	Team innovation	-.23	32	1, a, i	De Dreu (2002)

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Table 2. (continued)

Theoretical categories		Study variables					
TLB	TIWB	TLB	TIWB	Effect	N	Methodology	Study
		Learning	Team innovation (member/supervisor rating)	.79***/.62***	48	I, a, i	Drach-Zahavy and Somech (2001)
		Task reflexivity	Team innovation (member/supervisor rating)	.72**/.21 (Study 1) .62***/.48* (Study 2)	50/23 (Study 1/2)	I, a, i	Facchin (2008)
	IO	Team reflection	Team innovation	.50***	136	I, a, i	Somech (2006)
		Reflexivity	New product performance	.33*	39	2, a, i+ii	MacCurtain, Flood, Ramamoorthy, West, and Dawson (2010)
		Team reflexivity	Team innovations	.35**	97	I, a, i	Schippers, West, and Dawson (2015)
		Learning	Team innovation	.20**	224	I, a, i	Somech and Drach-Zahavy (2007)
Team activity	TIWB	Problem solving	Team's innovation	.25*	100	I, a, i	Tjosvold et al. (2009)
	TCB	Tie strength	Creative generativity	.32*	26	I, a, iii	Dokko, Kane, and Tortoriello (2014)
		Participation in problem solving	Creative processes	.78**	137	2, a, i+ii	Gilson and Shalley (2004)
		Socializing with coworkers		.32**			
		Team proactivity	Team creative performance	.61***	103	I, a, i	Shin and Eom (2014)
	TIB	Collaborative problem solving	Team innovation	.27	29	I, a, i	De Dreu (2006), Study 2
		Participation in decision making	Team innovation	.45*/.02 (Study 1/2)	21/28 (Study 1/2)	I, a, i/ 2, a, i + ii (Study 1/2)	De Dreu and West (2001)
		Frequency of meetings	Team innovation (member/supervisor rating)	.54***/.46**	48	I, a, i	Drach-Zahavy and Somech (2001)

Table 2. (continued)

Theoretical categories		Study variables		Effect	N	Methodology	Study
TLB	TIWB	TLB	TIWB				
		Team collaboration	Innovation	.56*	43	1, a, i	West and Wallace (1991)
		Participation in decision making		.37			
	IO	Internal processes	Innovation (quality)	.09	45	2, a, i + ii	Ancona and Caldwell (1992)
			Efficiency of innovation	.17			
		Team preparation	Procedure innovation	.39	16	2, a, i + ii	Edmondson (2003)
			Implementation success	.63**			
		Frequency of meetings	Team innovation	.19*	224	1, a, i	Somech and Drach-Zahavy (2007)
		Participation safety	Team innovation	.64**	27	1, b, i	West and Anderson (1996)
			Teams self-reports of innovation	.40*			
			Number of innovations	.21			
			Innovation magnitude	.57**			
			Innovation radicalness	.35			
			Innovation novelty	.46*			
		Task orientation	Team innovation	.89**			
			Teams self-reports of innovation	.10			
			Number of innovations	.26			
			Innovation magnitude	.67**			
			Innovation radicalness	.23			
			Innovation novelty	.29			
Boundary crossing	TIB	Boundary loosening activities	Team innovation	.23*	60	1, a, i	Somech and Khalaili (2014)
		Boundary tightening activities		.45**			
		Information acquisition (member/supervisor rating)	Innovativeness	.52*/.20	88	1, a, i	Van Woerkom and Croon (2009)
	IO	Frequency of communication (outside)	Innovation (quality)	.13	45	2, a, i+ii	Ancona and Caldwell (1992)
		Ambassadorial activities		.23			
		Task coordinator activities		.43**			

Table 2. (continued)

Theoretical categories		Study variables					
TLB	TIWB	TLB	TIWB	Effect	N	Methodology	Study
		Guard activities		-.11			
		Scouting activities		.41**			
		Frequency of communication (outside)	Efficiency of innovation	.21			
		Ambassadorial activities		.14			
		Task coordinator activities		.22			
		Guard activities		.04			
		Scouting activities		.36**			
		Boundary spanning	Procedure innovation	.60**	16	2, a, i+ii	Edmondson (2003)
			Implementation success	.66**			
		Gathering production-oriented information	Knowledge of incremental innovation	.66**	30	I, a, i	Timmerman et al. (2013)
			Use of incremental innovation	.68**			
			Knowledge of radical innovation	.58*			
			Use of radical innovation	.55*			
		Gathering development-oriented information	Knowledge of incremental innovation	.52			
			Use of incremental innovation	.52			
			Knowledge of radical innovation	.73**			
			Use of radical innovation	.64**			
Storage and retrieval	TIB	Information storage and retrieval	Innovativeness (member/supervisor rating)	.26/.19	88	I, a, i	Van Woerkom and Croon (2009)
	IO	Storage and retrieval of production-oriented information	Knowledge of incremental innovation	.55*	30	I, a, i	Timmerman et al. (2013)
			Use of incremental innovation	.75**			
			Knowledge of radical innovation	.47			
			Use of radical innovation	.55*			
		Storage and retrieval of development-oriented information	Knowledge of incremental innovation	.29			
			Use of incremental innovation	.38			
			Knowledge of radical innovation	.79**			
			Use of radical innovation	.62*			

Note. Except as stated otherwise, all listed effects are Pearson's r correlations. Concerning methodology, I = quantitative, 2 = mixed-methods, a = cross-sectional; b = longitudinal, i = survey; ii = interview; iii = multiple sources (note that only quantitative data were included in the review). TLB = team learning behaviors; TIB = team implementation behavior; IO = innovative outcome.
*p < .05. **p < .01. ***p < .001.

non-significant findings (Edmondson, 2003; Nijstad, Berger-Selman, & De Dreu, 2014). Also, one study reported a significant but weak effect on IO (Somech & Drach-Zahavy, 2007).

Team reflection. With few exceptions, the studies that included team reflection reported significantly positive effects on TIWB, TCB and TIB, and IO. In addition, Drach-Zahavy and Somech (2001) reported positive effects of team reflection on both member and supervisor-rated TIB. However, Facchin (2008) who compared effects on member and supervisor-rated TIB in two studies did not find an effect on supervisor-rated TIB in one of the studies. Furthermore, Buljac-Samardzic and Van Woerkom (2015) reported a positive effect of team reflection on IO at two points of measurement. A minor exception finally is the study by De Dreu (2002) who reported a non-significant negative effect of team reflection on TIB.

Team activity. Positive effects of team activity on TIWB and TCB were reported throughout the studies including this variable. Regarding TIB, Drach-Zahavy and Somech (2001) reported positive effects of team activity on both member and supervisor-rated TIB. By contrast, De Dreu and West (2001) only found a positive effect of team activity on TIB in one of their two studies. Also, West and Wallace (1991) only found a significant effect on TIB for one of their two indicators of team activity, and De Dreu (2006) found no supportive evidence for effects of team activity on TIB. Finally, in the studies that investigated effects of team activity on IO, mixed evidence was reported. While in one study, a positive effect on IO was reported (Somech & Drach-Zahavy, 2007), in a second study, only an effect on one of two indicators of IO was found (Edmondson, 2003), and in a third study, no evidence for this effect was found (Ancona & Caldwell, 1992). In addition, West and Anderson (1996) who investigated effects of two indicators of team activity and six indicators of IO only found significant effects of team activity in half of the cases.

Boundary crossing. Concerning engagement in boundary crossing, in two studies a positive effect on TIB was found. However, in one of these studies (Van Woerkom & Croon, 2009), this effect was only reported for member-rated but not for supervisor-rated engagement in boundary crossing. Moreover, a number of studies investigated effects of different indicators of boundary crossing on IO. Edmondson (2003) found that boundary crossing enhanced two indicators of IO. Timmerman et al. (2013) found consistently positive effects of boundary crossing in terms of gathering production-oriented information on incremental and radical IO, but only significant effects on radical IO for boundary crossing in terms of gathering development-oriented information. Similarly, the study by Ancona and Caldwell (1992) provided only partial support for the effect of boundary crossing on IO.

Storage and retrieval. Of the two studies that investigated effects of this variable, one study reported that storage and retrieval had no effect on member and supervisor-rated TIB (Van Woerkom & Croon, 2009). Moreover, Timmerman et al. (2013) reported that

storage and retrieval had substantial positive effects on both incremental and radical IO as far as production-oriented information was concerned, but only on radical IO as far as development-oriented information was concerned.

Discussion

The aim of this review was to gain deeper insight into the impact of TLB on TIWB by systematically integrating existing studies that have addressed this issue. Based on our review, we can make accurate recommendations about what kind of learning behaviors in teams need to be fostered to increase the innovative work behavior of teams.

Impact of TLB on TIWB

Before discussing our findings, it is important to note that there is no ideal order of learning behaviors in teams, which would make teamwork most effective (Decuyper et al., 2010). Accordingly, our review cannot be used as a starting point for deriving an ideal sequence of different TLB. Our results do, however, illustrate which TLB have the strongest impact on TIWB (see Table 3 for an integration of findings).

To begin with, our findings largely support the conclusion that teams that engage in learning behaviors are more strongly engaged in innovative work behavior than other teams. Among all learning behavior in teams, the most consistent patterns were found for sharing and team reflection. Work teams that shared more information and knowledge and reflected on team tasks and processes, were more strongly engaged in developing innovative products and processes. Similarly, teams that engaged in activities related to accomplishing their assigned work tasks and goals and thus progressed toward developing routines for solving task-related challenges (i.e., team activity) were also more strongly involved in creating and implementing innovative ideas. However, we only found partial support for the assumption that teams' engagement in team activity will lead to more innovative products and processes.

Furthermore, the findings of our review indicates that, partly because of the diversity of integrated variables, the role of co-construction and constructive conflict for enhancing TIWB is less clear. With respect to constructive conflict, we may conclude that teams that engage in the construction of a shared understanding of tasks, goals, and responsibilities do not necessarily explore opportunities for innovation more frequently or generate more creative ideas. Nevertheless, teams that strive toward developing shared mental models seem to be more involved in promoting and realizing ideas and to produce more innovative products and processes. Regarding constructive conflict, our evidence indicates that if teams negotiate complex or contradictory team-related issues beyond their comfort zone, they seem to be more strongly engaged in promoting and realizing innovative ideas, which may under certain conditions lead to more innovative products and processes. In addition, negotiation processes seem to be facilitative of innovative work behavior only if they are approached cooperatively rather than competitively or in an avoiding manner.

Table 3. Integration of Findings Concerning Effects of Team Learning Behaviors on Team Innovative Work Behavior.

Variables	Number of effects	TIWB 6	TCB 7	TIB 19	IO 17
TLB	1			+	
Sharing	6	+	+	+	+
			+		+
Co-construction	4		o	+/o	+
					o
Constructive conflict	9	+/−		o	+/o
		o		o	+/o
				+	+
				+	
Team reflection	11	+	+	+	+
		+		o	+
				+	+
				+/o	
				+	
Team activity	12	+	+	o	o
			+	+/o	+/o
			+	+	+
				+/o	+/o
Boundary crossing	5			+	+/o
				+/o	+
					+/o
Storage and retrieval	2			o	+/o

Note. The number of effects exceeds the number of studies as some of studies contain information about more than just one relationship between TLB and TIWB. "+" = significantly positive effect(s); "o" = non-significant effect(s); "+/o" = significantly positive and non-significant effect(s); "+/−" = significantly positive and significantly negative effect(s). TIWB = team innovative work behavior; TCB = team creative behavior; TLB = team learning behaviors; TIB = team implementation behavior; IO = innovative outcome.

Finally, although the available evidence concerning effects of boundary crossing and storage and retrieval was somewhat limited, we can conclude that teams that continuously bring new information into the team and which increase their visibility and power by disseminating outcomes of teamwork (i.e., boundary crossing) are more strongly engaged in promoting and realizing innovative ideas and produce more innovative products and processes. Concerning storage and retrieval, we found that teams that strive to make outcomes of their work persistent and accessible do not seem to carry out more activities related to implementing innovative ideas. Nevertheless, we can conclude that making outcomes of teamwork accessible and reusing them increases the likelihood that teams produce innovative products and processes.

Limitations and Implications for Future Research

Although our findings allow us to draw conclusions about which TLB have to be fostered to stimulate TIWB as a whole or teams' engagement in creative and implementation behavior, we cannot imply the existence of a starting point when it comes to fostering teams' engagement in innovation development. Furthermore, our review does not provide insight into the impact of TLB on teams' engagement in accomplishing specific requirements for innovation development, that is, the exploration of opportunities as well as the generation, promotion, and realization of creative ideas. Accordingly, future research should address the role of TLB on specific dimensions of TIWB.

Moreover, attention should be paid to the diversity of variables that were investigated by the studies we selected for our review. Although our theoretical conceptualizations of TIWB and TLB allowed us to categorize and integrate the findings of the original studies, the robustness of our conclusions may therefore be somewhat limited. Furthermore, two studies (Gu, Wang, & Wang, 2013; Hu & Randel, 2014) that investigated team innovativeness as the potential to perform innovative work behavior or to produce innovative products and processes were excluded as they did not fit into any of our theoretically derived categories of TIWB. Accordingly, future studies are needed that provide more consistency regarding operationalization and measurement of TIWB and TLB. Although it is not likely that future studies will include all the theoretically outlined dimensions of TIWB and TLB in one study, our study provides a conceptual basis for the integration of future empirical studies. Accordingly, our review helps to enrich the empirical insight into specific aspects of this relationship, such as the relationship between TIWB and boundary crossing, on basis of a sound conceptual basis.

Moreover, in addition to broadening the empirical insight into the relationship between TIWB and TLB, a future step would be an empirical integration of findings by using meta-analytic techniques. At the other end of the continuum, the findings of our review and of future empirical integrations may be used to further develop the theoretical basis of the relationship between TIWB and TLB.

In addition, while our review aimed at gaining insight into the relationship between team learning processes (i.e., TLB) and outputs of team learning processes (i.e., TIWB as a behavioral output), many of the selected studies also contained inputs of team learning processes. Accordingly, our current review provides a basis for integrating these input variables in a future review.

Concerning methodology, it needs to be taken into account that the majority of the selected studies used self-ratings of team members in a cross-sectional, correlative design. This design, however, is inaccurate for grasping the dynamics of team development as outlined in Garavan et al.'s (2015) networked perspective on human resource development. Likewise, the mutual relationship between TLB and outcomes of TLB, such as TIWB, as implied by Decuyper et al.'s (2010) integrative model of team learning cannot be adequately captured by this kind of design. Therefore, longitudinal studies that allow researchers to investigate emergent states of team learning

and to imply causal relationships among TLB and outputs, such as TIWB, are needed. In addition, studies are needed that do not solely rely on self-report measures but that use, for instance, multiple data sources. In addition, qualitative studies (e.g., multiple case studies in an ethnographic approach) would provide deeper insight into the chaotic processes involved in developing an innovation or into the dynamics of team learning and the role of non-rational aspects of team learning such as affects (Volet, Vauras, Khosa, & Iiskala, 2013). Moreover, future studies should apply sophisticated analytical methods, such as multilevel procedures, to take into account both variance at team level and at individual level.

Finally, concerning generalizability, it is important that future research on the relationship between TLB and TIWB pays attention to domain-specific differences. In this regard, it has to be considered that a major part of our findings stems from investigations with teams in industrial companies. These may differ significantly from teams in the health care sector or in education. Concerning the latter, Truijen, Sleegers, Meelissen, and Nieuwenhuis (2013) pointed out that, for instance, in vocational colleges innovative solutions are required for adapting to the needs of students, expectations of parents, demands of the labor market, and new policies. There is also empirical evidence concerning domain-specific differences. For instance, while Somech and Drach-Zahavy (2007) found that team activity and IO were positively correlated in teacher teams, mixed evidence for this relationship was provided for top management teams in hospitals and cardiac surgery teams (Edmondson, 2003; West & Anderson, 1996) and no evidence for this relationship was found for teams in high-tech companies (Ancona & Caldwell, 1992). This issue may, for instance, be tackled by integrating sufficiently large subsamples of teams from different domains in the same study. In addition, replication studies in different domains are needed to find out exactly what results are caused by domain-specific characteristics.

Practical Implications

Based on our evidence about effects of TLB on TIWB, we can draw valuable implications for personnel in all kinds of organizations. This includes individual employees working in teams, supervisors responsible for teams, as well as practitioners in human resources and managers. The most important implication is that, although we described TIWB as an outcome of TLB, team learning and innovation development are processes that co-exist in practice and which mutually enhance each other. This conclusion is also consistent with the correlational nature of the findings of our review, which largely support the conclusion that TLB and TIWB are mutually and positively related. Accordingly, organizations can equally benefit from fostering TLB or TIWB. The following practical implications will be structured along three major starting points for fostering both TLB and TIWB, namely, *social interactions*, *work design*, and *visibility*.

Social interactions. As teams are a fundamentally social entity within organizations, means of fostering social interactions in teams and thus their engagement in behaviors such as sharing, team reflection, and the implementation of innovative ideas are central.

To begin with, teams will benefit from any occasions that enable them to share information and develop a shared understanding of this information. This, in turn, will provide them with a basis for all other TLB (e.g., reflecting about routines, strategies, and responsibilities) and for TIWB (e.g., generating innovative ideas).

To enable sharing, team members have to be open to disclose their knowledge and experience. In this regard, more experienced team members may act as role models. However, experienced team members may also be stuck in teams and therefore less innovative. Furthermore, the team as a whole has to create occasions for exchange and discourse, for instance, by organizing formal team meetings or by exchanging informally.

In addition, supervisors have to provide teams with the necessary resources for engaging in team interactions. This can include formulating clear expectations about the importance of frequently discussing critical issues, contradictory approaches, or innovative solutions. In addition, it is crucial that teams have sufficient time for team meetings besides immediately task-related activities. Furthermore, supervisors can support team discourses by showing appreciation for the individual team members' contributions. Supervisor support becomes increasingly important when team interactions affect persons and processes outside the team, for instance, when a team seeks to build a coalition for realizing an innovative solution. Finally, supervisors may foster team interactions by providing new or controversial information, which forces team members out of their comfort zone but eventually leads to improved levels of team performance.

Work environment. A second starting point for fostering TLB and TIWB regards the characteristics of a team's work environment including team tasks, structures, and climate.

To begin with, supervisors should provide their team with varying kinds of work tasks that require multiple expertise to be accomplished and which force team members to join forces and distribute responsibilities efficiently. Furthermore, relations among different tasks may lead to new perspectives and innovative solutions for particular team tasks.

Moreover, supervisors may foster teamwork by communicating clear expectations regarding proper approaches and outcomes, for instance, by defining minimum standards for work processes and outcomes and leaving autonomy for exploring different approaches and for playing controversial solutions. In addition, one such standard may relate to regular team meetings and the explicit expectation to come up with innovative solutions.

Furthermore, assigning a team member as team leader may facilitate teamwork processes as team leaders can function as brokers between team supervisors and team members. In addition, team leaders may take responsibility for creating occasions for team interactions.

Moreover, a stimulating work climate is crucial for enabling teams to work efficiently. This, for instance, refers to whether team members perceive their team as a safe work environment and whether they trust their team supervisor. In a climate of

safety and trust, teams will more likely address challenging issues and suggest innovative ideas. Furthermore, teams will more likely choose uncertain or risky approaches toward tasks or experiment with new solutions if errors are perceived as learning opportunities within the team and by their supervisor and if their organization has an established error culture. Finally, feedback may play a crucial role for triggering team reflection and thus for enabling teams to adjust routines, strategies, and responsibilities. Therefore, a requirement would be that team members provide each other with feedback. In addition, team leaders and supervisors of teams can be important sources of feedback. In addition, it is inevitable for the effectiveness of feedback that practitioners in human resources or managers establish an organizational feedback culture, which highlights the importance of useful and applicable feedback.

Visibility. The visibility of a team and thus its ability to interact with its environment (e.g., with their supervisor or with other teams) is a third crucial factor for enabling effective teamwork. Two aspects of visibility may be distinguished: First, visibility of the outcomes of teamwork refers to the storage of team products in form of narrative (e.g., a discussion among team members) or digital (e.g., an electronic file) artifacts. The storage of team products enables teams to engage in social interactions (see above) and provides a basis for the communication of teams with their environment. Second, visibility of teams as social entities within organizations refers to the legitimacy of teams. This allows teams to interact with other individuals or teams inside their organization and to represent their organization by interacting with individuals or teams in other organizations.

To increase the visibility of teamwork outcomes, various instances of documentation are important. For instance, teams may prepare minutes of informal and formal team meetings to present the progress with accomplishing a particular task, (e.g., the development of a new service for clients) to their supervisor. Task-related documentations may also be used by supervisors and practitioners in human resources as an instrument for identifying particular team needs such as group counseling or training. In addition, frequent documentation enables teams to moderate their internal reflection on tasks, challenges, and needs. Moreover, documentations of teamwork provide a basis for developing goal descriptions that include the current and envisioned status of team processes and outcomes. Goal descriptions may be formulated by the team as well as collaboratively with the team supervisor, for instance, as part of periodical feedback.

Increasing the intra- and extra-organizational visibility of teams as social entities requires that team supervisors or team leaders engage in networking activities and promote the work of the team in interactions with other internal and external supervisors or experts. Based on this support, teams may engage in boundary-crossing activities such as reaching out to other teams (inside and outside the organization) to gain new insights that may be relevant for team tasks. Also, teams may invite guests with particular expertise to team meetings. In this regard, experienced team members or team leaders have core responsibilities for bringing new information into the team as well as for representing the team and its outcomes in interactions with other teams,

organizations, or clients. Finally, managers may foster boundary-crossing activities by encouraging supervisors and, subsequently, teams to engage in intra- and extra-organizational exchange and collaboration.

Conclusion

This review integrates existing empirical insights into the relationship between TIWB and TLB and provides answers to the question how teams can be supported in developing innovative products and processes. Based on our findings, several TLB have to be considered as critical elements for innovative teamwork. Specifically, teams will be more effective in developing innovations if processes of sharing and team reflection take place in the team. Likewise, teams are more innovative if they learn to pursue their team goals in a persistent manner with openness for multiple approaches. Other TLB, such as engaging in critical conflicts or managing and crossing the team's boundaries, are important for team development at large but have a more indirect relationship with TIWB. To foster TLB, teams should be provided with meaningful opportunities for social interactions, work in an environment that makes teamwork necessary, be able to continuously build on their own achievements, and experience their work as a valuable part of organizational processes.

Declaration of Conflicting Interests

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