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The effect of team feedback and guided reflexivity on team performance change

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ABSTRACT

Providing teams with feedback has been forwarded as a powerful practice to improve their learning and performance. Yet, this learning potential may not be realized unless teams actively process this feedback by stepping back from their team activity, building plans, and ultimately putting them into action. In an experimental study ($N = 212$ undergraduate students), we compared the effects of team-level feedback with or without an intervention prompting shared reflection on the feedback (i.e., guided reflexivity) to a no feedback control group on team performance growth. The results showed that only the combination of team performance feedback and guided reflexivity lead to performance change, at the beginning of team activity. These findings suggest that prompting feedback processing at an early stage of collaborative work has the power to help teams benefit from their past experiences and improve performance.

1. Introduction

For many years, collaborative learning has been at the top of the research agenda in the domain of learning and instruction (e.g., Kirschner, 2009; Tolmie et al., 2010). There is a general agreement that it plays a fundamental role in shaping learning and achievement in school and beyond (e.g., Kirschner, Paas, & Kirschner, 2009). More specifically, team learning has been addressed as a specific form of collaborative learning and investigated in educational and workplace settings (Decuyper, Dochy, & Van den Bossche, 2010). In both environments, learning and working units are established as *teams* which can be defined as two or more interdependent individuals (i.e., dyads, triads, and larger groups) who pursue a common goal, require social interaction, share responsibility for a team product, and have clear differentiated responsibilities and roles (Salas, Dickinson, Converse, & Tannenbaum, 1992). Importantly, teams are not static in their behavior: they learn from the interactions taking place between their members, their work on task(s), and how the social environment responds to their work. Accordingly, team learning has been defined as "an ongoing process of reflection and action" (Edmondson, 1999, p. 353) during which teams reflect on their own prior activities and consequently plan adjustments for future practice (see Decuyper et al., 2010, for a review). Unfortunately, however, the learning behaviors of many teams rarely conform to theoretical models since they are seldom employed spontaneously (Edmondson, 1999). As such, while scholars have made progress in understanding predictors and consequences of team learning (Decuyper et al., 2010), it remains a matter of concern to identify interventions that can shape the learning potential of teams (Kozlowski & Ilgen, 2006).

Research on individual learning provides insight in this regard. Providing *individuals* with feedback has been outlined as an effective intervention in any learning process and achievement (e.g., Shute, 2008). Individuals do not only need feedback to improve their strategies and gain deep understanding of their task, but also to monitor and regulate their work (Hattie & Timperley, 2007). However, research at the individual-level cannot be simply applied

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in team settings due to the additional complexity of dealing with unique team-level properties that emerge from team interactions, communication, and the collective knowledge pool (Barr & Conlon, 1994). Whereas scholars (e.g., Barr & Conlon, 1994; London & Sessa, 2006) seem to agree on the need to study feedback at the team-level of analysis, this effort is somewhat fragmented and incomplete.

Although research at the team-level of analysis shows that feedback given to *teams* on their performance has the power to steer, motivate, support, and reinforce future team behavior, 1) feedback effects on team performance are inconsistent (see Gabelica, Van den Bossche, Segers, & Gijselaers, 2012, for a review), and 2) very little empirical work is available on the mechanisms relating team-level feedback to team performance improvement (London & Sessa, 2006).To address these challenges, theoretical work puts forward team reactions to feedback as the immediate antecedents of performance improvement. In fact, teams critically need to process feedback, that is collectively attend to and discuss its content, build a common ground and understanding of their experience, and come to a consensus on whether feedback contains cues for improved future behaviors to make the desirable changes. In other words, teams need to *reflect upon* feedback to capitalize it (London & Sessa, 2006; Prins, Sluijsmans, & Kirschner, 2006).

The concept *of team reflexivity* connotes those reflective activities during which teams use information coming from performance feedback to reach new meanings and understandings and consensus on necessary changes. It is defined as the extent to which teams collaboratively reflect upon their own functioning with a dual focus on the past (i.e., evaluation of accomplishments) and the future (e.g., identification of new strategies) (West, Garrod, & Carletta, 1997). The emergent research strand on team reflexivity suggests it should follow a time-ordered sequence of three activities (i.e., reflective cycles). Specifically, teams are expected to be more effective when they sequentially a) evaluate their past performance and strategies, b) search for alternatives in how they could have approached their task, and c) develop new actions and strategies to change their future practice (e.g., Schippers, Den Hartog, & Koopman, 2007). When team members discuss and elaborate on feedback, it creates a collective space of concepts and knowledge ('common ground') that they use to guide their actions and thus improve their team performance (Yukawa, 2006). Hence, we argue that to optimize their performance, teams need to be given accurate feedback describing their achievement, but also be directly stimulated and prompted to use the feedback opportunities to reflect on this feedback in a systematic way (i.e., *guided reflexivity*) (Noroozi, Biemans, Weinberger, Mulder, & Chizari, 2013; Wills & Clerkin, 2009).Therefore, in the present paper, we aim to provide empirical evidence that team-level performance feedback in combination with guided team reflexivity will be more effective than feedback alone. This is studied with highly interdependent student dyads performing a complex multiple-trial task increasing in difficulty across four performance episodes.

1.1. Feedback interventions

Prior to addressing feedback in teams, it is important to derive lessons from the much more substantial body of research on feedback given to individuals. In the learning sciences it is pointed out that feedback is an instructional practice that has both informational value, in terms of supporting learning, and motivational value, in terms of stimulating greater effort (Shute, 2008). Despite the prevalent claims about its performance benefits, Kluger and DeNisi (1996), in their pivotal review on individual-level feedback, did find a substantial number of ineffective applications. They concluded that performance feedback (i.e., information concerning performance outcomes) was not always beneficial to individuals and advised future researchers to consider the process of how feedback leads to performance. Later research has provided two major insights in this regard: to be effective, feedback should 1) contain learning information (e.g., Duijnhouwer, Prins, & Stokking, 2012; Gibbs & Simpson, 2004) and 2) stimulate cognitive activities of the learners (e.g., Boud & Molloy, 2013). The latter introduces the notion that the feedback process is more than simply providing feedback (Mulder, 2013); it should critically include the uptake of feedback by its receivers. For example, Hattie and Timperley (2007) have argued that feedback needed to induce three questions in receivers' mind to trigger its processing: 1) where am I going? (feed-up), 2) how am I going (feed-back), and 3) where to next (feed-forward). Alike, reflection has been forwarded as a useful strategy to enhance feedback processing (Duijnhouwer et al., 2012; Seibert, 1999). In the relatively smaller research strand on feedback to teams, the issue of how feedback impacts team performance has been largely neglected (Gabelica et al., 2012; Gabelica, Van den Bossche, Segers, & Gijselaers, 2014).

1.2. Feedback in teams

Recent years have shown an increased research interest in feedback interventions at the team level. These are defined as the communication of information, provided by (an) external agent(s), concerning actions, events, processes, or behaviors relative to task completion or teamwork (Gabelica et al., 2012; London, 2003). For example, medical teams can receive patient-satisfaction data, specifically team-level performance feedback depicting how the whole team operated regarding the quality of care and service. Feedback has diverse functions such as: highlighting the outcome of the team activity or the process, conveying information against which teams can recalibrate their goals when they move away from them, steering the team activity, and detecting errors, but also stimulating discussion, and argumentation with others (Bartram & Roe, 2008). Only recently, a literature review (Gabelica et al., 2012) summarized the findings of fifty-nine studies on feedback in teams. On the one hand, this review also showed that feedback might influence a wide range of critical team processes and states (e.g., motivation, team goal, team collaboration, and team cohesion) and occasionally performance. For example, in their experimental study, Prussia and Kinicki (1996) demonstrated that team-level feedback affected team performance through the mediation of the collective efficacy of teams performing a brainstorming task. On the other hand, the review highlighted that a considerable number of studies was not able to establish any performance benefits of feedback (Gabelica et al., 2012). For example, in an experiment conducted by Brannick, Prince, and Salas (2005), intact Navy teams did not improve their technical problem-solving proficiency compared to a no feedback group in a flight simulation.

Based on these mixed results, the review concluded that although feedback seems to be beneficial, certain conditions need to be created to increase its effects. First, the performance effects of providing feedback depend on its quality (i.e., accurate, specific, well-timed, regular, non-threatening, shared, directed at teams it targets, and distributed fairly amongst team members). Second, feedback will be more likely to produce performance changes in teams with no redundant members or tasks, working in projects, setting goals and strategies or given information about goal attainment, provided with incentives and rewards, believing they are high-performing, and exhibiting no unsolved intragroup conflicts and a flexible workload. Third, theoretical work (e.g., London & Sessa, 2006) proposes that feedback receivers should perceive the feedback as a learning need and opportunity and use this opportunity to instigate improvements. Hence, teams should become