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Antecedents and consequences of collective empathy in software development project teams

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ABSTRACT

The term empathy has attracted many researchers from a variety of disciplines; however, a team's collective empathy, which is composed of cognitive, affective, and behavioral dimensions, has rarely been addressed in the literature. In this study, we empirically investigated the relationship between the collective empathy of a team and the effectiveness of its project process. Additionally, we tested the role of team intimacy-related factors, such as interpersonal trust, within-team communication, and team member familiarity, in collective empathy, as well as the moderating role of group norms on the collective empathy-process effectiveness link. By studying 122 software development projects, we found that cognitive-based trust, formal within-team communication, and team member familiarity influence the collective empathy of project teams. We also found that collective empathy affects team learning and product speed-to-market and results in lower project development costs. Furthermore, we determined that the existence of group norms moderates the relationships among collective empathy, speed-to-market, and lower development costs. The managerial and theoretical implications of the study have also been provided.

1. Introduction

Software development teams, composed of people from different functional areas who have varying technical skills and personalities, are critical for the success of firms' software development and implementation projects [44]; such projects involve specific activities that start and end at identifiable points in time and produce quantitative and qualitative software deliverables [77]. Researchers have indicated that software development teams are knowledge-intensive social bodies in which team members interact, behave, and organize and then share their information/knowledge to develop better and faster new software products [82]. Additionally, researchers have asserted that software development teams have their own emotions, and each team member's understandingof the other team members' emotions, similar feelings or relevant feelings, and response (i.e., interpersonal empathy) are vital for enhancing software development project performance [15,83]. Thus, interpersonal empathy among team members evokes people's altruistic motivations [39], increases their concern for the welfare of the team/group as a whole [17], and helps them to better resolve conflicts within the team [27].

Neverthless, whereas most studies have discussed or investigated the concept of empathy at the individual level, such as interpersonal empathy in work groups or teams [17], few studies have suggested empathy at the team level as a collective phenemenon, that is, *collective empathy*, in software development teams [4]. Additionally, although the term collective empathy is partially or implicitly mentioned in the studies of emotionally intelligent teams [39,30], the emotional capability of organizations [4,48], group emotions [14,62], group/organizational compassion [50], and corporate philanthropy decisions [73], it has not been conceptualized or operationalized for an empiricaltest in the software development context.

In addition to the lack of operationalization of collective empathy, the antecedents and consequences of collective empathy in software development teams have not been investigated from a managerial perspective in the literature thus far.

Furthermore, the moderating variables that shape the relation between collective empathy and project-related outcomes (i.e., consequences) have received less attention in the literature. Indeed, when a project team has too much collective empathy among its members, team members may develop deep emotions (e.g., sympathy) or a group-think phenomenon. Conversely, with a

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lower level of collective empathy, team members may display egocentricity and narcissism, thereby destroying the potential for insightful thinking during the new software development project. Thus, the empirical investigation of whether the relation between collective empathy and project-related outcomes should be regulated with group-related processes is warranted.

To address the above mentioned issues, we argue that team collective empathy can be conceptualized as an appreciation and understanding of what team members are experiencing emotionally, as well as an emotional reaction to other team members' feelings during the software development project [4,30,50,73,53]. Specifically, collective empathy is a shared state of empathy that includes more than one person and indicates the extent to which team members collectively empathize within the teamduring the software development project.

Regarding the operationalization of collective empathy, based on individual-level studies [65,31] and group-level studies [4,50,53,86], we suggest that collective empathy is a multidimensional construct composed of (a) cognitive (i.e., collective perspective taking or the extent to which team members attempt to understand each other by imagining the others' perspective), (b) affective (i.e., collective empathic concern or the extent to which team members feel concern for a person or group of people), and (c) behavioral (i.e., outward display of empathy or affective responsiveness) dimensions. These dimensions are reflective measures, which are observed variables that serve as manifest indicators of the collective empathy of a project team.

For antecedents of collective empathy, we investigated team intimacy-related factors. The rationale is that, whereas previous studies identified a variety of factors, such as social connections [90], role clarity [72], and information sharing [33], that influence the development of empathy in interpersonal relations, there is a common argument, influenced by attachment theory [19], in the literature that intimacy (i.e., feelings of closeness, connectedness in relationships) plays a critical role in empathy formation [51]. For example, in their studies on attachment theories, Mikulincer and Shaver [70] discovered that what encourages or muddles empathy is the sense of security and closeness that people feel within themselves. de Vignemont and Singer [23] also suggested that attachment theories provide support for empathy. Nevertheless, intimacy-related factors, such as interpersonal trust (i.e., reliance on the integrity, ability, or character of team members) [49], within-team communication (i.e., the exchange of information in a formal and informal manneramong team members) [61], and team member familiarity (i.e., team members' past interactions) [25], as contributors to the development of collective empathy at the project team level, are not explored in the literature; this warrants empirical study, as recommended by Rosh et al. [87].

Regarding the consequences of empathy, we investigated project process effectiveness as implicitly recommended by Reus and Liu [83], Nicholson and Sahay [75], and Akgün et al. [4]. Specifically, whereas past studies demonstrated that interpersonal empathy influences group cohesiveness [86], conflict reduction, group motivation [17,27], and ethical decision making [73,68], the role of collective empathy in project performance in general; in addition, process effectiveness, in particular, has not been empirically investigated in software development projects. Here, based on the project management literature, the process effectiveness variables in which project managers have the most interest are team learning (i.e., gathering and implementing new knowledge, solving software product-related problems), development cost, and speed-to-market (i.e., developing and implementing software products quickly) [3].

Finally, for a moderating variable, we selected one of the group process variables, the existence of group norms, as recommended by Kelly and Barsade [53] and Bagozzi et al. [11]. Indeed, researchers have suggested that empathy is shaped or regulated through the establishment and reinforcement of group norms [31], as shown by the forms of feeling rules and display rules [39,48,50,53]. Nevertheless, we know less regarding how the existence of group norms moderates the relation between collective empathy and process effectiveness in software development project teams.

Therefore, as shown in Fig. 1, this study investigated (a) the role of team intimacy-related variables (e.g., interpersonal trust, within-team communication, team member familiarity) on collective empathy formation, (b) the impact of collective empathy on software development project process effectiveness (e.g., team learning, speed-to-market, lower development cost), and (c) the moderating role of group norms on the relation between collective empathy and software development project process effectiveness.

2. Collective empathy in project teams

The concept of collective empathy, influenced by intergroup emotions theory [14,62], which describes how individual empathic emotion converges to become collective, and affective events theory [99], which illustrates how the needs of others arouse empathy in individuals, is a relatively new research area in the management and group behavior literature. At the group level of studies, for instance, Kelly and Barsade [53], in their mood and emotions studies, described the collective empathy when group members share another's feelings by placing themselves

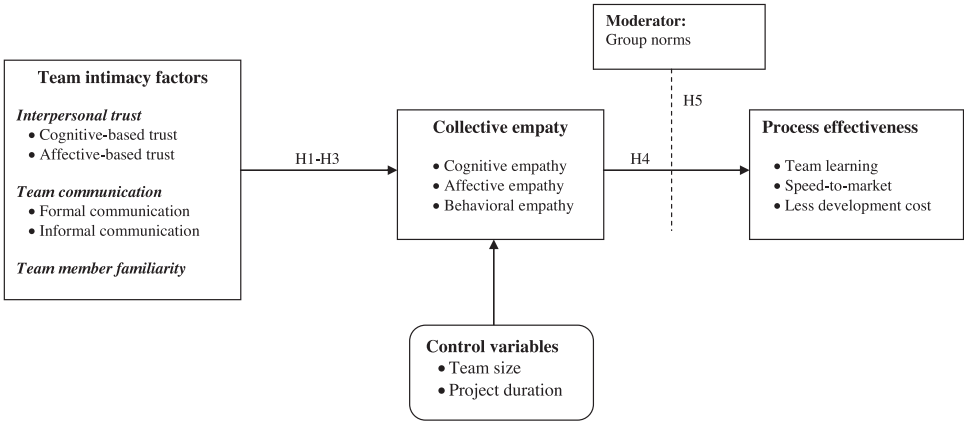

Fig. 1. Research model.