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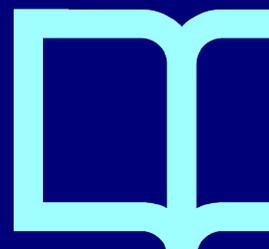
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# **Can Virtuality be Protective of Team Trust? Conflict and Effectiveness in Hybrid Teams**

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## **Abstract**

Virtuality is noticeably present in organizations and influences the way people interact within teams. This study involved 104 organizational teams with some degree of virtuality and intends to analyze a moderated-mediation model in which virtuality moderates the indirect effect of team conflict on team effectiveness and innovation through team trust. First, results reveal that the negative association between conflict and team trust was significant for task conflict only in teams with low virtuality, and for relationship conflict was significant under low and moderate levels of virtuality. Finally, findings indicate that virtuality moderated the negative mediated relationship between both task and relationship team conflict and team effectiveness only through cognitive trust. Overall, the findings suggest that virtuality may protect team trust from the negative effects of conflict, and they point to the key role of cognitive trust as an antecedent of team effectiveness in hybrid teams.

*Keywords:* Virtuality, team conflict, team trust, team effectiveness, hybrid teams.

## Introduction

Virtual work is the new normal in organizations (Raghuram et al., 2019). Advances in communication technology have enabled companies to use different types of virtual work arrangements to reduce or even eliminate time and space restrictions. In line with De Jong et al. (2008), we conceptualize team virtuality as a continuum that can be described as the extent to which team members use communication media to coordinate their actions and perform their tasks. Every team can be placed on this continuum, from completely face-to-face to totally virtual communication. In the present study, our focus is on hybrid teams, i.e. teams that are not completely face-to-face or virtual, occupying an intermediate position on this continuum (Purvanova & Kenda, 2021). These teams work both through face-to-face interaction and using computer-mediated communication technologies (Kahlow et al., 2020). The concept of blended teams is also found in the literature to define these teams (e.g., Gaggioli et al., 2015). Due to changes in work arrangements and advances in technology, these types of teams will tend to be the norm rather than the exception in the future of teamwork. Accordingly, studying their functioning and effectiveness becomes a central topic because most studies on teamwork focus on either face-to-face teams or completely virtual teams, or they may even study hybrid teams, but without acknowledging it.

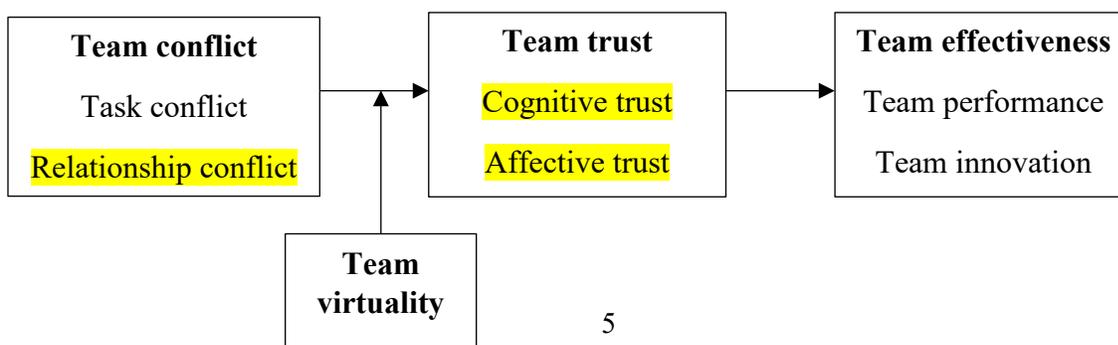
Specifically, we intend to study the role of conflict and trust in the effectiveness of hybrid teams. Moreover, we explore the role of the level of virtuality as a moderator in the relationship between team conflict and team trust. Previous studies have provided support for the negative influence of team conflict on team trust in face-to-face teams (e.g., Peterson & Behfar, 2003). We expect that in hybrid teams the level of virtuality will have a buffering effect on the negative relationship between team conflict and team trust. We

propose this role based on Kelley's (1973) theory of attribution and the perception that trust is a valuable resource for teams who mostly communicate virtually (Breuer et al., 2016).

Previous empirical findings tend to reveal a negative influence of conflict on team effectiveness (De Dreu & Weingart, 2003), as well as a positive relationship between team trust and team effectiveness, namely, with team performance (Breuer et al., 2016; De Jong et al., 2016) and team innovation (e.g., Bao et al., 2004). But, even though research consistently points out the detrimental effects of relationship conflict on team performance, concerning task conflict the results are not so conclusive (De Wit et al., 2012). In fact, there is empirical evidence of the effect of moderators on the association between team conflict and both performance (e.g., Khosravi et al., 2020) and innovation (e.g., Martinez-Moreno et al., 2012). Therefore, our main focus was to contribute to the explanation of the association between conflict (both task and affective) and effectiveness, operationalized by innovation and performance, through team trust, predicting that this mediation would depend precisely on the level of virtuality of the team. Based on the expected buffering effect of the level of virtuality on the negative relationship between team conflict and team trust, we expect that the effect of team conflict on team trust and, subsequently, on both team performance and team innovation, will be greater in teams with higher levels of virtuality. Figure 1 depicts the moderator mediation model, which is fully developed in the following sections.

**Figure 1**

*Hypothetical Model*



This study contributes to previous studies in different ways. First, we focus on hybrid teams as teams that combine different communication media, from face-to face to asynchronous and synchronous computer-mediated communication. Virtuality is operationalized as a continuum instead of a dichotomy, making it possible to better understand the effect of different degrees of virtuality on team functioning and team effectiveness. Accordingly, this study contributes to increasing the knowledge about this type of teams, which are becoming more common due to changes in the way we interact in organizations. Second, findings contribute to existing about the association between conflict, trust, performance and innovation in teams with different levels of virtuality. Therefore, this study can help to better understand how teams can combine face-to-face and computer-mediated communication to prevent conflict adverse effects and to improve team trust and effectiveness, namely performance and innovation.

## **Literature Review**

### **Conflict and Trust in Teams: Virtuality as a Moderator**

Both conflict and trust are considered core processes in collaboration and relationships in virtual teams (Axtell et al., 2004). Team conflict is generally defined as the presence of disagreements between members of the same team, and it is usually conceptualized as task and relationship oriented (De Dreu & Weingart, 2003; Jehn, 1994; Yang & Mossholder, 2004). Task conflict occurs when team members perceive tension based on different opinions and perspectives about group tasks, and relationship conflict is commonly related to tensions and animosities due to differences in team members' personalities, beliefs, and attitudes (De Dreu & Van Vianen, 2001). Task conflict can be expressed through energetic discussions about team tasks, and relationship conflict may

involve intense negative emotionality, such as mutual blaming and insults or showing irritation and hostility (Jehn & Mannix, 2001).

The definition of trust at the team level is considered an isomorphic construct of interpersonal trust, which means it involves the same cognitive- and affective-based components when collectively shared within the team (Costa et al., 2018). Moreover, there is clear evidence of the construct validity of team trust as a shared perception of trust among team members (Costa & Anderson, 2011). Based on previous definitions of interpersonal trust (Mayer et al., 1995; McAllister, 1995), several authors define the team level of trust as the consensual perception within the team about the willingness to accept other members' vulnerability and positive expectations of trustworthiness in colleagues' behaviors and intentions (Costa et al., 2018; Fulmer & Gelfand, 2012). In other words, team trust refers to team members' perception of openness to sharing ideas, feelings, and concerns, the expectation of receiving support and understanding, and the recognition of the professional competence of team members. In the present study, team trust is conceptualized as having two distinct but related facets: a cognitive dimension and an affective dimension (McAllister, 1995). Cognitive-based trust is usually grounded in people's knowledge about the trustee's competences and credibility. Affective-based trust is related to the reciprocal perception of emotional investment, care, and concern about others. This dimensional model of trust has been empirically supported at the group level (Barczak et al., 2010; Webber, 2008).

Several studies clearly indicate a negative association between both task and relationship conflict and intragroup trust considered as a unidimensional construct (Curşeu & Schreijer, 2010; Langfred, 2007; Peterson & Behfar, 2003; Rau, 2005; Rezvani et al., 2019). Few studies have examined this association by distinguishing between the cognitive

and affective dimensions of team trust, but there is empirical evidence showing that both task and relationship conflict are negatively related to cognitive and affective intragroup trust (e.g., Khan et al., 2015).

Various mechanisms could explain these negative links between both task and relationship conflict and trust among team members (Langfred, 2007; Simons & Peterson, 2000). Because task conflict involves disagreements about how the work should be accomplished, mutual understanding and tolerance would be affected, undermining confidence in the competences and intentions of colleagues. Similarly, relationship conflict could hinder team trust because divergence based on interpersonal incompatibilities is often related to tension, intolerance, and anger among team members, and negative emotions may reduce their willingness to be vulnerable and evaluate colleagues as supportive. Moreover, the escalation of conflict could lead to hostile attitudes and negative attributions about others' behaviors (Han & Harms, 2010; Khan et al., 2015). Likewise, the De Wit et al. (2012) meta-analysis of intragroup conflict concludes that both task and relationship conflict are negatively related to positive attitudes toward the group (i.e., group member satisfaction and group member identification). In summary, an increase in negative emotional experiences within the team can trigger a lack of confidence in others' intentions, generating a climate of suspiciousness and intolerance. Hence, team members become reluctant to take risks because they neither trust others' abilities (cognitive trust) nor show emotional concern about team colleagues (affective trust). Thus, we expect team conflict to be negatively related to team trust (cognitive and affective) in hybrid teams as well.

Hypothesis 1: Team conflict (task and relationship) is negatively related to team trust (cognitive and affective) in hybrid teams.

When teams are not virtual, their members are co-located and communicate entirely face-to-face, whereas members of virtual teams are dispersed and unable to interact face-to-face, working only through technology-mediated communication (De Jong et al., 2016). However, nowadays, teams that work exclusively through face-to-face or virtual contacts seem to be uncommon in organizational contexts (Griffith et al., 2003). Accordingly, this research includes hybrid teams whose members use both face-to-face and virtual communication in their daily teamwork. Specifically, we intend to analyze the effect of the virtuality level on the relationship between team conflict and team trust.

Based on empirical findings, teams that combine face-to-face and computer-mediated communication might have advantages compared to virtual teams, whose interactions rely solely on communication technology, and teams that exclusively use in-person communication. On the one hand, some of the communication drawbacks, such as the failure to establish mutual knowledge (Cramton, 2001) and increases in the perceived risk of team failure (Robert et al., 2009) in virtual teams, might be prevented when members of teams with some degree of virtuality also meet face-to-face with some regularity. They would have contextual and personal knowledge about colleagues, which can promote the development of trust (Wilson et al., 2006). On the other hand, interpersonal trust is generally considered a more noteworthy feature in groups whose members mostly communicate virtually (Breuer et al., 2016; Haines, 2014; Muethel et al., 2012) and an essential condition for teamwork collaboration and cooperation in virtual teams, where uncertainty is higher (Moe & Šmite, 2008; Peters & Manz, 2007). Moreover, trust may be more fragile and difficult to maintain over time in global virtual teams (Jarvenpaa et al., 1998). Therefore, trust might be perceived by members of teams with higher levels of virtuality as a valuable resource that should be maintained and reinforced because they

would have fewer opportunities to communicate and solve disagreements through face-to-face contacts. We argue that, in highly virtual teams, virtuality will have a buffering effect, reducing the impact of team conflict on team trust.

Attributional theories can shed light on the impact of virtuality on the association between team conflict and trust (Jarvenpaa et al., 2004). Based on some principles of the attributional approach, particularly Kelley's theory of attribution, there is a tendency to overestimate the influence of dispositional characteristics on a person's behavior judgments when situational information is lacking (Kelley, 1973). Additionally, previous perceptions of others' actions and intentions have an impact on later judgments because behavior that is not consistent with these previous expectations is usually attributed to external factors (Kelley & Micaela, 1980). Moreover, as Dirks and Ferrin's (2001) framework proposes, trust has an important role in both judgments of past behaviors and assessments of future behaviors of other people, particularly in environments where there is a lack of proximal information about others' actions. Previous familiarity among team members who have high virtuality can reduce the probability of assigning personal attributions to team conflict and increase the possibility of finding external explanations for any task- or relationship-related disagreements and misunderstandings that might occur during computer-mediated interactions (for example, technical failures may affect the quality of communication during a virtual meeting, and difficulties with the Internet connection could contribute to the lack of immediacy of feedback). Based on this approach, Jarvenpaa et al. (2004) conclude that global teams with a high perception of team trust may be more prone to attributing external causes to eventual delays and irregularities in communication. Thus, trustful relationships within the team, which are based on expectations about individual credibility and reciprocal emotional investment, may be less affected by conflict intensification when communication

technology use is the predominant interaction pattern among team members who also have situational knowledge about their colleagues. In contrast, members of dispersed teams that only interact virtually tend to attribute dispositional causes to failures in information exchange and interpretation because situational clues about remote colleagues are missing (Cramton, 2001). Nevertheless, when disagreements and conflicts arise in teams where virtuality is higher, but there is also face-to-face interaction, members may tend to make external attributions related to external factors associated with the use of computer-mediated communication technologies.

In summary, based on the arguments presented above, the buffering effect of virtuality can be explained by the fact that teams with high virtuality and regular in-person contact are more likely to assign situational attributions to task- and relationship-related misunderstandings. Additionally, when teamwork involves less face-to-face interaction, people might be more cautious about their verbal and behavioral manifestations in order to preserve intragroup trustworthiness, which is perceived as an asset that is more difficult to restore when the virtuality level is high. In sum, we predict that the negative impact of task and relationship conflict on the perception of cognitive and affective trust is higher when teams have lower levels of virtuality.

Hypothesis 2: Virtuality moderates the relationship between team conflict (task and relationship) and team trust (cognitive and affective), such that the association is stronger in teams with lower levels of virtuality.

### **Team Trust and Team Performance**

The rise in team-based organizations has increased the focus on team trust as a crucial aspect of teams' functioning in organizations (De Jong et al., 2016), mainly because the willingness to be vulnerable is the basis for trust and the foundation of teamwork. Team

trust tends to reduce uncertainty and increase the predisposition to interact, cooperate, exchange information, and improve communication (Costa & Anderson, 2011), which are essential factors for team learning, team growth, and team effectiveness. Without trust, individuals cannot understand and be open to each other, which has a negative impact on team effectiveness (DeOrtentiis et al., 2013). In the research on the relationship between team trust and team effectiveness criteria, studies of team performance, which can generally be defined as the extent to which a team accomplishes its goal or mission (Devine & Philips, 2001), have rapidly increased (De Jong et al., 2016).

Although the results of empirical studies are mixed and sometimes contradictory (De Jong & Dirks, 2012), the majority support a positive relationship between trust and performance (e.g., De Jong & Elfring, 2010; Burke et al., 2007; Costa et al., 2001). This positive relationship is also supported by two recent meta-analyses carried out by Breuer et al. (2016) and De Jong et al. (2016).

According to De Jong et al. (2016), the positive effect of team trust on team performance can be explained by the fact that trust suspends uncertainty and vulnerability toward the team coworkers, enabling team members to allocate their energy and exchange resources in ways that contribute to team performance. Moreover, team trust creates a climate of involvement with team goals, promoting information, knowledge sharing, and collaborative relationships among team members (Rezvani et al., 2019) and reducing the need for monitoring, thus increasing group effort and motivation (Zornoza et al., 2009). Taken together, these attitudes and behaviors act as facilitators to enhance performance.

Regarding the relationship between each team trust dimension (cognitive and affective) and team performance, several studies suggest that both dimensions of team trust, although functionally distinct, contribute positively to the team's performance (e.g.,

Schaubroeck et al., 2011). On the one hand, the cognitive dimension increases members' belief in goal achievement, motivating them to develop task-oriented actions towards these goals. The affective dimension, on the other hand, also contributes to team performance, but mainly because it makes team members feel comfortable disclosing information, motivating them to engage in interpersonal-oriented actions that promote goal achievement (De Jong, et al., 2016; Schaubroeck et al., 2011).

As in traditional teams, in hybrid teams, a positive association between trust and team performance is also expected. Indeed, trust may decrease the problems that arise from the constraints of the use of communication technology, contributing to preventing or overcoming misunderstandings and conflicts that often emerge due to the use of technology and the absence of face-to-face interactions. Moreover, trust increases team members' willingness to open up to each other and share information required for cooperation and goal achievement, and a trust climate favors the acquisition of shared knowledge about the competence and reliability of others in the group (Zornoza et al, 2009). Thus, in a context with some degree of virtuality, the creation of a trusting environment among team members can also be a key factor in the team results, as in traditional face-to-face teams (Breuer et al., 2016).

In face-to-face teams, in virtual contexts, both team trust dimensions seem to be positively related to team performance. Grichanik (2014), for instance, found that when team members trust each other's abilities (cognitive trust) and believe that others are concerned with their mutual well-being (affective trust), group performance increases. In the same vein, Kanawattanachai and Yoo (2002) analyzed changes in trust levels during a project, and they concluded that virtual teams that developed and maintained higher levels

of trust showed higher performance levels. Considering the literature reviewed, we formulate the following hypothesis:

Hypothesis 3: Team trust (cognitive and affective) is positively associated with team performance in hybrid teams.

### **Team Trust and Team Innovation**

In order to maintain or improve effectiveness in rapidly changing environments, organizations need to adapt appropriately, and innovation is a key element at all levels of organizational processes (Batarseh et al., 2017).

At the team level, teams that engage in innovation processes intentionally seek, try out, and implement new and useful ways to do their job (West & Anderson, 1996). Therefore, team innovation can be defined as the intentional introduction and application of new ideas, processes, products, and procedures in order to improve the results of the group or organization (Batarseh et al., 2017). Team innovation requires learning behaviors and/or knowledge transmission that occurs through conversations between interdependent people, so that individuals can combine different insights (Anderson & West, 1998). In this regard, team innovation is a collective learning process through which new ways of solving problems are developed (Alegre & Chiva, 2008), and it requires the parties involved to suspend judgment, remain open to the ideas and perspectives of others, and make the necessary effort to integrate new knowledge with existing knowledge (Gibson & Gibbs, 2006). Thus, team innovation requires that team members trust each other. Establishing trust among team members helps them to smooth over the difficulties they face at work and freely exchange information and ideas through collaborative actions, which can lead to new products, services, or ways of working (Bao et al., 2004). Indeed, previous studies have

found support for the positive relationship between team trust and innovation (e.g., Bao et al., 2004; Ruppel & Harrington, 2000; West & Anderson, 1996).

Regarding the relationship between each team trust dimension and innovation, Khan et al. (2015) suggest that both dimensions positively influence team innovation. On the one hand, affective trust can encourage team members to share new information and ideas that are essential for innovation. On the other hand, cognitive trust is the cornerstone of this process because the different views that arise in innovation processes are interpreted based on the perception of reliability members have of each other with regard to performance-relevant factors. In line with this, Erdem and Ozen (2003) show that both dimensions of trust have strong positive relationships with team planning, problem-solving, and continuous quality improvement.

In teams with some degree of virtuality, as mentioned in the previous section, the research emphasizes that trust is an important requirement for team functioning and its effectiveness (including innovation) because electronically-mediated cooperation is often accompanied by feelings of uncertainty and perceived risks (e.g., Jarvenpaa et al., 1998). Trust implies a climate where team members feel safe to more openly share ideas, opinions, and reflections on problems encountered during task performance (Peñarroja et al., 2015). Thus, we can assume that, in hybrid teams, trust is also required for team innovation. Therefore, we hypothesize that:

Hypothesis 4: Team trust (cognitive and affective) is positively associated with team innovation in hybrid teams.

### **Moderated-Mediation Hypotheses**

Considering the three preceding hypotheses, two moderated-mediation predictions can be formulated because both the association between conflict and trust and the indirect effect of team conflict on both team outcomes maybe affected by the level of virtuality.

Indeed, the previous rationale suggests that team conflict is negatively related to team trust, and that team trust is positively related to both team performance and team innovation. Accordingly, team conflict will have an indirect relationship with team effectiveness through its negative influence on team trust. We argue that the indirect effect of team conflict on team effectiveness through team trust will be buffered by the level of virtuality of the team. When the level of virtuality is higher in hybrid teams, team conflict will have a weaker effect on team trust because team members will tend to attribute disagreements to situational causes, and, simultaneously, tension associated with conflict will be expressed in a more inconspicuous way. Consequently, the negative influence of team conflict on team performance and innovation, through its negative effect on team trust, will be higher in teams with lower levels of virtuality than in teams with higher levels of virtuality.

Hypothesis 5a: Virtuality moderates the negative mediated relationship between team conflict (task and relationship) and team performance through team trust (cognitive and affective). The mediated relationship is more evident when teams have lower levels of virtuality.

Hypothesis 5b: Virtuality moderates the negative mediated relationship between team conflict (task and relationship) and team innovation through team trust (cognitive and affective). The mediated relationship is more evident when teams have lower levels of virtuality.

## Method

### Procedure and Participants

This present study was approved by the Ethics Committee of the Faculty of Psychology and Educational Sciences of the University of Coimbra, Portugal (CEDI-FPCE-UC). Organizations were identified through personal and professional contacts, and they were informed about the purpose and requirements of the study, as well as the benefits of their participation (e.g., report on the organization's results). When organizations agreed to participate, the teams to be surveyed were selected by considering the following criteria (Cohen & Bailey, 1997): (1) teams had to be composed of at least three members; (2) be perceived by themselves and others (e.g., other teams in the organization) as a team; (3) regularly interact, interdependently, to accomplish a common goal; and (4) have a formal supervisor who was responsible for the actions of the team. Informed consent was required from all team members and leaders to allow study participation. All measures were anonymously self-reported by subjects and the strict confidentiality of their responses was assured.

In the first contact with the organizations, it was proposed by the research team that the data collection should take place in person at the organization. The majority of teams and leaders filled the questionnaires with the presence of a member of the research team to clarify any possible questions or doubts. In cases where this procedure was not possible, the team leader was asked to distribute and collect the questionnaires filled out by the members of the respective team. However, some of the teams and leaders filled in the questionnaires online (the questionnaire was available in [www.limesurvey.org](http://www.limesurvey.org) platform). The link for each questionnaire was sent directly to each one of the respondents, by e-mail.

To be considered for the present study, at least 50% of the members of each team had to provide valid answers. Likewise, questionnaires were eliminated if more than 10 per cent of the answers were missing (Bryman & Cramer, 2005).

To analyze the distribution pattern of missing values and verifying the hypothesis of the missing values being at random, the Little's MCAR test was used. When the missing values were distributed at random ( $p \geq .05$ ), the imputation was carried out by the mean, as there was no pattern that could be explained by the characteristics of the items and/or the participants (Hair et al., 2010); in cases where the distribution was non-random ( $p < .05$ ), the imputation was conducted using the Expectation Maximization (EM) method.

The sample was composed of 104 teams and their respective leaders from various Portuguese organizations. They were mostly from the services sector (62.5%), and the majority were small and medium-sized companies (73.6%). All the teams surveyed were hybrid teams, i.e., they combined face-to-face interaction with the use of computer-mediated communication tools. To be included in our sample, at least 20% of the team interaction had to be face-to-face. The large majority of the teams (86.5%) had between 20% and 75% of face-to-face interaction ( $M=47.73$ ;  $SD=20.35$ ). Team size ranged from three to 22 members, with an average of approximately six members ( $SD = 4.16$ ). The team tenure had an average of approximately 9 years ( $SD = 8.28$ ). Team members ( $N = 487$ ) had a mean age of 36 years ( $SD = 11.40$ ); 58% were female; and 54% had a higher education background and had been working in the team for an average of five years ( $SD = 6.43$ ). Team leaders ( $N = 104$ ) were predominantly male (63%) with a mean age of 44 years ( $SD = 10.27$ ); 72% had a higher education background and an average of six years of experience leading the current team ( $SD = 6.53$ ). Data was collected before Covid-19 pandemic has emerged.

## **Measures**

A multisource approach was implemented for data collection. Team members were surveyed about team virtuality, intragroup conflict, and team trust, whereas leaders were surveyed about team innovation and team performance. This approach, along with other strategies such as ensuring anonymity and confidentiality, contributes to reducing the risk of common method variance (Podsakoff et al., 2003).

### ***Team Virtuality***

To measure team virtuality, we used the indicator proposed by De Jong and colleagues (2008), based on the Baltes et al. (2002) guidelines, which consider (a) the frequency of technology use, (b) the degree of synchronization, and (c) the presence of nonverbal and para-verbal cues. For nine ways of communicating (e.g., face-to-face, chat, videoconference), respondents were asked to indicate the extent of the use of these media in team communication (adding up to 100%). Then, the percentage of use of the communication medium was multiplied by the medium's virtuality (which considers the extent to which the medium is synchronous and conveys para-verbal and nonverbal aspects of communication). An aggregated score is obtained by adding up all the scores for the communication tools used by each team. The indicator varies between 0 and 100, with higher values indicating higher levels of virtuality.

### ***Intragroup Conflict***

Intragroup conflict was assessed with six items obtained from Dimas and Lourenço (2015): three items measured task conflict, and the others assessed relationship conflict. All items were answered on a 7-point Likert-type scale, ranging from (1) *never* to (7) *always*. Team members were asked to rate how often they perceived tension in the team related to,

for instance, “different opinions about the work being done” (sample item for task conflict) or “personal differences between team members” (sample item for relationship conflict).

### ***Team trust***

Team trust was assessed with eight items obtained from McAllister (1995): four items assessed cognitive trust, and the other items assessed affective trust. Items were adapted to be team- rather than individual-referent. A sample item for cognitive trust is “My colleagues approach team objectives with professionalism and dedication”, and for affective trust “We would feel a sense of loss if one of us left the group and we could no longer work together”. The response scale is a 6-point Likert-type scale, ranging from (1) *strongly disagree* to (6) *strongly agree*.

### ***Team innovation***

Team innovation was assessed with the two-item scale by Vera and Crossan (2005). A third item was added to the scale, obtained from Batarseh et al. (2017). The responses given by team leaders were rated on a Likert-type scale ranging from (1) *strongly disagree* to (7) *strongly agree*. A sample item is: “The team frequently introduces new product/service innovations”.

### ***Team performance***

Team performance was assessed with four items obtained from Lourenço et al. (2014) that measure the leader’s perception of different issues related to the quality and quantity of work produced by the team. A sample item is “quality of the work produced” by the team. The response scale had 10 points (1 = *poor* to 10 = *excellent*).

### ***Control variables***

Previous studies reveal that team size may affect team processes and results, (e.g., Hülsheger et al., 2009; Rebelo et al., 2018). Thus, team size was included as a control

variable. Team size was obtained by asking team leaders about the number of members in their teams. We also considered the perception of subgroups as a control variable because virtuality can strengthen the effect of team diversity on the perception of subgroups due to members' different locations (Axtell et al., 2004). Moreover, literature suggests that the existence of subgroups within the same group is positively associated with group conflict (Thatcher & Patel, 2011) and negatively associated with team trust (van Knippenberg et al., 2004) and team performance (Antino et al., 2019). To assess this variable, team members answered the single item "Subgroups are formed when we are working together on a task", rated on a 7-point Likert scale from 1 = *strongly disagree* to 7 = *strongly agree*.

## **Results**

### **Preliminary Analysis**

Due to sample size restrictions, two confirmatory factor analyses (CFA) using the maximum likelihood estimation method were conducted to evaluate the discriminant validity of the measurement scales: one with the measures assessed by team members (i.e., intragroup conflict and team trust) and the other with the scales evaluated by team leaders (i.e., team innovation and team performance). The analyses were performed using the AMOS (Version 25) software. To evaluate the level of fit of the models, the following indicators were considered:  $\chi^2$  Goodness-of-Fit Statistic, Root Mean Square Error of Approximation (RMSEA), and Comparative Fit Index (CFI). Values below .08 for RMSEA indicate a good fit (Browne & Cudeck, 1993). For CFI, values greater than .90 indicate a good fit, whereas values greater than .95 indicate excellent fit (Hu & Bentler, 1999).

For team members' measures, the four-factor measurement model yielded an acceptable fit to the data ( $\chi^2 (71) = 248.52, p < .001, CFI = .96, TLI = .95, RMSEA = .07$ ). All standardized factorial loadings of the different items on their respective latent variables

were significant ( $p < .001$ ) and varied between .75 and .89, indicating convergent validity. Because the correlations between the two dimensions of each scale were above .80 (i.e., .85 between task and relationship conflict, and .87 between cognitive and affective trust), we tested a two-factor solution where task conflict was combined with affective conflict and cognitive trust was combined with affective trust. Results revealed that the four-factor model outperformed the two-factor model ( $\chi^2 (76) = 493.109, p < .001, CFI = .91, TLI = .89, RMSEA = .11$ ). Additionally, a one-factor solution was tested, and the results indicated a poor fit to the data ( $\chi^2 (77) = 1747.801, p < .001, CFI = .65, TLI = .58, RMSEA = .21$ ).

Regarding team leaders' measures, the CFA analysis provided an acceptable fit of the two-factor model ( $\chi^2 (13) = 29.154, p < .01, CFI = .96, TLI = .94, RMSEA = .11$ ). The RMSEA value exceeded the generally accepted .08 cut-off value, but small samples tend to produce larger RMSEA values (Hu & Bentler, 1999). All standardized factorial loadings of the different items on their respective latent variables were significant ( $p < .001$ ) and varied between .73 and .90, indicating convergent validity. The correlation between the two variables ( $r = .51, p < .001$ ) indicates discriminant validity. We also tested a one-factor solution, and the fit of this solution was clearly inferior to the two-factor solution ( $\chi^2 (14) = 165.647, p < .001, CFI = .65, TLI = .47, RMSEA = .32$ ).

Intragroup conflict and team trust were examined at the team level but collected at the individual level. Thus, members' responses were aggregated to the team level by computing the average of team members' perceptions on these variables. To ensure that the aggregation was appropriate in our sample, we assessed the degree of intrateam consensus by calculating the interrater reliability index  $r_{WG}$  (James et al., 1993) and ICC(1) and ICC(2) (Bliese, 2000). The average  $r_{WG}$  across the 104 teams was .81, .83, .88, and .88 for task conflict, relationship conflict, cognitive trust, and affective trust, respectively. The

ICC(1) for the same variables was .26, .39, .29, and .30, respectively, whereas ICC(2) was .63, .75, .65, and .66. Taken together, the  $r_{WG}$ , ICC(1), and ICC(2) values provide sufficient justification for aggregating the data at the team level in this study (Bliese, 2000).

Means, standard deviations, and scale reliabilities for each scale and bivariate correlations among the variables included in the study are presented in Table 1. With regard to the significant correlations with the control variables, team size is positively correlated with relationship conflict and negatively with innovation. The perception of subgroups is negatively correlated with cognitive trust and positively with both task and relationship conflict, as well as with virtuality.

**Table 1**

*Correlation Matrix, Means and Standard Deviations for Study Variables*

Variables	1.	2.	3.	4.	5.	6.	7.	8.	9.
1. Task conflict	(.87)								
2. Relationship conflict	.76***	(.84)							
3. Cognitive trust	-.38***	-.40***	(.91)						
4. Affective trust	-.29**	-.30**	.83***	(.88)					
5. Performance	-.23*	-.30**	.42***	.33**	(.86)				
6. Innovation	-.18	-.25*	.37***	.26**	.60***	(.90)			
7. Virtuality	.12	.20*	.11	.13	-.17	-.06	-		
8. Team size	.14	.21*	-.12	-.09	-.11	-.24*	.08	-	
9. Perception of subgroups	.41***	.42***	-.26**	-.19	-.15	-.14	.25*	.19	-
<i>M</i>	3.33	3.32	5.03	4.96	7.97	5.03	37.34	6.43	3.50
<i>SD</i>	0.82	0.88	0.59	0.62	0.98	1.08	15.67	4.17	1.39

*Notes.* \* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ . Scale reliabilities are presented within parentheses.

### **Moderating Effects of Virtuality**

The hypotheses were tested through bootstrapping analysis, produced by the PROCESS macro for SPSS (Version 3.3), following Hayes' guidelines (2018).

Tables 2 and 3 present the results obtained in the multiple regression analysis where

team trust is predicted by task and relationship conflict, respectively, considering virtuality as moderator. The moderator and the predictors, which are included in the interaction terms, were mean-centered prior to analysis.

**Table 2**

*Multiple Regressions Predicting Team Trust from Task Conflict. Virtuality as Moderator Variable (Controlling for Team Size, Perception of Subgroups and Relationship Conflict)*

	B	SEB	$\beta$	<i>t</i>	$R^2$	<i>F</i> (6,97)
Cognitive trust					.30	6.99***
Team size	-0.00	0.01	-.002	-0.03		
Perception of subgroups	-0.07	0.04	-.12	-1.68		
Relationship conflict	-0.24	0.09	-.36	-2.59		
Task conflict	-0.13	0.10	-.18	-1.33		
Virtuality	0.01	0.003	.20	2.22*		
Task conflict x Virtuality	0.01	0.003	.30	3.19**		
Affective trust					.22	4.60***
Team size	0.00	0.01	.02	0.17		
Perception of subgroups	-0.06	0.05	-.13	-1.26		
Relationship conflict	-0.22	0.10	-.31	-0.31		
Task conflict	-0.10	0.10	-.14	-0.97		
Virtuality	0.01	0.004	.19	2.05*		
Task conflict x Virtuality	0.01	0.003	.30	3.06**		

Note. \* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ .

The results partially support Hypothesis 1 because only relationship conflict negatively predicted both cognitive and affective team trust ( $p < .05$ ). All the interaction effects (Tables 2 and 3), after controlling for all the predictors, were statistically significant ( $p < .01$ ). By conducting a hierarchical multiple regression, it was possible to analyze whether adding the interaction terms to the regression model significantly increased the predictability of the criterion variables. Accordingly, the amount of additional explained variance after introducing each of the product terms was significant when predicting cognitive trust from task conflict,  $\Delta R^2 = .07$ ,  $\Delta F(1,97) = 10.21$ ,  $p < .01$ , and relationship conflict ( $\Delta R^2 = .06$ ,  $\Delta F(1,97) = 7.57$ ,  $p < .01$ ), and when predicting affective trust from task

conflict ( $\Delta R^2=.08$ ,  $\Delta F(1,97)=9.34$ ,  $p < .01$ ) and relationship conflict ( $\Delta R^2=.09$ ,  $\Delta F(1,97)=11.43$ ,  $p < .01$ ).

**Table 3**

*Multiple Regressions Predicting Team Trust from Relationship Conflict. Virtuality as Moderator Variable (Controlling for Team Size, Perception of Subgroups and Task Conflict)*

	B	SEB	$\beta$	<i>t</i>	$R^2$	<i>F</i> (6,97)
Cognitive trust					.28	6.42***
Team size	-0.00	0.01	-.02	-0.18		
Perception of subgroups	-0.05	0.04	-.12	-1.26		
Task conflict	-0.12	0.10	-.17	-1.27		
Relationship conflict	-0.25	0.10	-.37	-2.60*		
Virtuality	0.01	0.003	.18	1.79		
Relationship conflict xVirtuality	0.01	0.003	.27	2.75**		
Affective trust					.24	5.01***
Team size	0.00	0.01	.01	0.09		
Perception of subgroups	-0.04	0.05	-.08	-0.83		
Task conflict	-0.10	0.10	-.14	-0.14		
Relationship conflict	-0.24	0.10	-.34	-2.37*		
Virtuality	0.01	0.004	.17	1.52		
Relationship conflict xVirtuality	0.01	0.003	.34	3.38**		

Note. \* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ .

To test the significant interactions, conditional effects of the focal predictor on the criterion variable at different values of the moderator were calculated. The results are shown in Tables 4 and 5, considering task conflict and relationship conflict as predictors, respectively, and they are consistent with the predictions, supporting Hypothesis 2. The values of the moderator (i.e., the virtuality level) correspond to one standard deviation below the mean (low virtuality), at the mean (moderate virtuality), and one standard deviation above the mean (high virtuality).

**Table 4***Conditional Effects of Task Conflict on Team Trust at Different Group Virtuality Levels*

	Cognitive Trust					Affective Trust				
	<i>B</i>	<i>SE</i>	<i>t</i>	95% CI		<i>B</i>	<i>SE</i>	<i>t</i>	95% CI	
				LL	UL				LL	UL
Low virtuality	-0.28	0.11	-2.55*	-0.49	-0.06	-0.26	0.12	-2.17*	-0.50	-0.02
Moderate virtuality	-0.13	0.10	-1.33	-0.31	0.06	-0.10	0.10	-0.97	-0.31	0.11
High virtuality	0.02	0.10	0.23	-0.18	0.23	0.06	0.11	0.50	-0.17	0.28

Notes. \* $p < .05$ . 5,000 bootstrap resamples were used for indirect confidence intervals

**Table 5***Conditional Effects of Relationship Conflict on Team Trust at Different Group Virtuality**Levels*

	Cognitive Trust					Affective Trust				
	<i>B</i>	<i>SE</i>	<i>t</i>	95% CI		<i>B</i>	<i>SE</i>	<i>t</i>	95% CI	
				LL	UL				LL	UL
Low virtuality	-0.36	0.11	-3.18**	-0.58	-0.14	-0.39	0.12	-3.21**	-0.63	-0.15
Moderate virtuality	-0.25	0.10	-2.60*	-0.44	-0.06	-0.24	0.10	-2.37*	-0.44	-0.04
High virtuality	-0.13	0.09	-1.44	-0.32	0.05	-0.09	0.10	-0.92	-0.29	0.11

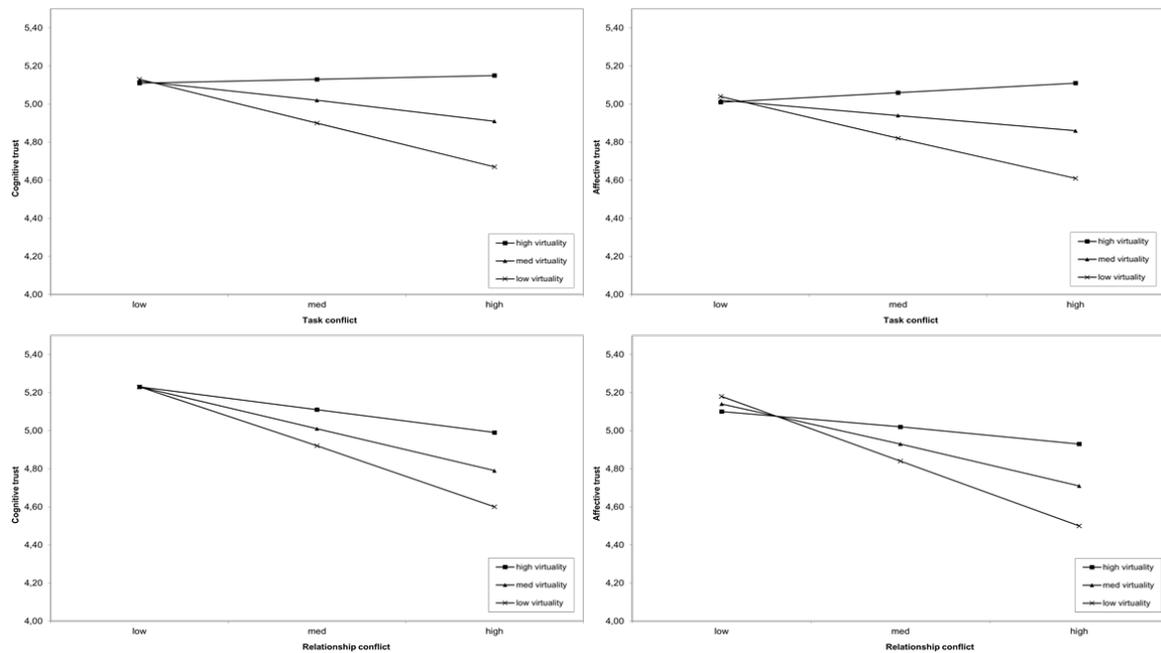
Notes. \* $p < .05$ . \*\* $p < .001$ . 5,000 bootstrap resamples were used for indirect confidence intervals.

Results show that the associations between task conflict and cognitive and affective trust are negative and significant only when the level of group virtuality is low ( $p < .05$ ), given that the product term was significantly different from zero at low levels of the moderator (Table 4). Moreover, the negative relationships between relationship conflict and each dimension of team trust were statistically significant under low and moderate virtuality levels ( $p < .05$ ) because this product term is also significantly different from zero

at low and moderate levels of the moderator (Table 5). In contrast, and according to findings presented in Tables 4 and 5, all the regression line slopes for the high level of virtuality are not significantly different from zero ( $p > .05$ ). These results are displayed in Figure 2.

**Figure 2**

*Interaction Effects of Virtuality and Team Conflict (Task and Relationship) on Team Trust (Cognitive and Affective)*



### Team Trust, Team Performance, and Team Innovation

Table 6 presents the direct effects between the predictors (task and relationship conflict) and the outcomes, and between the mediators (cognitive and affective trust) and the outcomes.

**Table 6**

*Multiple Regressions Predicting Team Performance and Team Innovation from Team Conflict and Team Trust (Controlling for Team Size and Perception of Subgroups)*

	B	SEB	$\beta$	<i>t</i>	$R^2$	<i>F</i> (6,97)
Team performance					.20	4.02**
Team size	-0.01	0.02	-.03	-0.36		
Perception of subgroups	0.01	0.07	.01	0.08		
Task conflict	0.08	0.17	.07	0.46		
Relationship conflict	-0.22	0.16	-.20	-1.36		
Cognitive trust	0.65	0.28	.39	2.31*		
Affective trust	-0.05	0.26	-.03	-0.20		
Team innovation					.19	3.74**
Team size	-0.05	0.02	-.18	-1.92		
Perception of subgroups	0.01	0.08	.01	0.08		
Task conflict	0.11	0.19	.08	0.58		
Relationship conflict	-0.18	0.18	-0.15	-1.00		
Cognitive trust	0.76	0.31	0.42	2.45*		
Affective trust	-0.20	0.29	-0.12	-0.71		

Note. \* $p < .05$ . \*\* $p < .01$

Results displayed in Table 6 point to partial support for Hypotheses 3 and 4 because only cognitive trust positively predicts team performance and team innovation ( $p < .05$ ).

### **Moderated-Mediated Effects**

To test the moderated-mediated effects of team trust on the relationship between team conflict and team performance (Hypothesis 5a) and innovation (Hypothesis 5b), a resampling bootstrapping procedure and 5,000 samples were used for indirect confidence intervals (Hayes, 2018). Tables 7 and 8 provide the indirect effects of team conflict on team outcomes through cognitive and affective trust in teams with different virtuality levels.

**Table 7**

*Moderated-Mediation Analysis for Task Conflict as Predictor: Estimates and Bootstrap Percentile Confidence Intervals for Indirect Effects (Controlling for Team Size and Perception of Subgroups)*

	Performance				Innovation			
	Estimate	SE	95% CI		Estimate	SE	95% CI	
			LL	UL			LL	UL
<b>Cognitive trust</b>								
Low virtuality	-0.18	0.10	-0.43	-0.02	-0.21	0.13	-0.54	-0.02
Moderate virtuality	-0.08	0.07	-0.26	0.03	-0.10	0.09	-0.32	0.04
High virtuality	0.02	0.07	-0.14	0.16	0.02	0.09	-0.16	0.21
Index of mod-med	0.01	0.003	0.001	0.01	0.01	0.004	0.001	0.02
<b>Affective trust</b>								
Low virtuality	0.01	0.07	-0.15	0.16	0.05	0.10	-0.12	0.28
Moderate virtuality	0.01	0.04	-0.09	0.10	0.02	0.06	-0.09	0.16
High virtuality	-0.003	0.04	-0.08	0.09	-0.01	0.06	-0.17	0.10
Index of mod-med	-0.001	0.003	-0.01	0.01	-0.002	0.004	-0.01	0.01

*Notes.* 5,000 bootstrap resamples were used for indirect confidence intervals. Index mod-med=Index of moderated mediation.

The results presented in Tables 7 and 8 reveal some significant indirect effects, controlling for team size and perception of subgroups. Significant negative indirect effects of task conflict on both team performance and innovation through cognitive trust were observed only when teams had low virtuality (Table 7). Moreover, the negative indirect effect of relationship conflict on both team outcomes (performance and innovation) were negative and significant through cognitive trust in teams with low virtuality levels (Table 8). Furthermore, following Hayes' (2018) guidelines, to test the differences between conditional indirect effects, moderated mediation indexes were calculated, and the results appear in Tables 7 and 8. The findings indicate that the conditional indirect effects estimated at different levels of team virtuality (low, moderate, and high) were significantly

different from each other, only when the indirect effects of team conflict on team outcomes occurred through cognitive trust.

**Table 8**

*Moderated-Mediation Analysis for Relationship Conflict as Predictor: Estimates and Bootstrap Percentile Confidence Intervals for Indirect Effects (Controlling for Team Size and Perception of Subgroups)*

	Performance				Innovation			
	Estimate	SE	95% CI		Estimate	SE	95% CI	
			LL	UL			LL	UL
Cognitive trust								
Low virtuality	-0.23	0.13	-0.54	-0.01	-0.27	0.18	-0.69	-0.01
Moderate virtuality	-0.16	0.10	-0.40	0.01	-0.19	0.13	-0.50	0.01
High virtuality	-0.09	0.08	-0.26	0.07	-0.10	0.10	-0.32	0.10
Index mod-med	0.01	0.003	0.001	0.01	0.01	0.004	0.001	0.02
Affective trust								
Low virtuality	0.02	0.11	-0.21	0.23	0.08	0.15	-0.17	0.43
Moderate virtuality	0.01	0.07	-0.15	0.15	0.05	0.10	-0.11	0.29
High virtuality	0.01	0.04	-0.09	0.08	0.02	0.06	-0.08	0.19
Index mod-med	-0.001	0.003	-0.01	0.01	-0.002	0.003	-0.01	0.004

*Notes.* 5,000 bootstrap resamples were used for indirect confidence intervals. Index mod-med=Index of moderated mediation.

In conclusion, virtuality moderates the negative mediated relationship between both task and relationship team conflict and team outcomes (i.e., performance and innovation) only through cognitive trust. These mediated associations were only significant when teams had lower levels of virtuality. Therefore, Hypotheses 5a and 5b were only partially supported by the results.

## Discussion

The first aim of the present study was to analyze the effect of virtuality in hybrid teams on the negative relationship between team conflict and team trust.

Regarding Hypothesis 1, results partially supported the predictions because, in contrast to relationship conflict, task conflict did not predict team trust. Even though the literature shows clear evidence of unfavorable consequences of both task-related and relationship conflict on team trust when this construct is operationalized as a unidimensional construct (e.g., Curşeu & Schrujjer, 2010; Rezvani et al., 2019), this association is considerably less established in literature when team trust is divided into cognitive and affective trust. In addition, previous results suggest that the effect of team conflict on team outcomes depends on the presence of other variables. In fact, the meta-analysis by De Wit et al. (2012), based on a contingency approach, points to the existence of moderators related to methodological issues, team characteristics, and contextual factors, in the relationship between team conflict and group proximal and distal outcomes. Indeed, and according to Hypothesis 2, our study found significant interaction effects of virtuality in the association between team conflict and trust, revealing that virtuality contributes to weakening some of the negative effects of conflict on trust found in the research with traditional face-to-face teams, as mentioned above. Thus, virtuality was found to have the predicted buffering effect in the association between both task and relationship conflict and each of the two trust dimensions. However, the interaction effects of team conflict and virtuality on trust have slightly different nuances. The negative association between conflict and team trust (cognitive and affective) is significant for task-related conflict only in teams with low virtuality. In the case of relationship conflict, this association was significant in teams with low and moderate levels of virtuality. These findings indicate that relationship conflict is not detrimental to the perception of trust within the team, but only when virtuality levels are high, suggesting that this type of conflict tends to trigger distrust among colleagues when face-to-face interaction between team members becomes more frequent.

However, the negative influence of task conflict on team trust is not significant, even when team members interact moderately through face-to-face communication.

Previous research shows that relationship conflict frequently involves emotional tension and anger between team members and, consequently, can lead to hostile attributions of others' behaviors (Han & Harms, 2010; Khan et al., 2015). This might be more likely when people more regularly communicate face-to-face because of the greater expression of both verbal and non-verbal clues of negative emotions. Only when team members mainly work through computer-mediated communication technologies does this negative impact of relationship conflict tend to disappear, given that emotions may be less obtrusively expressed in dispersed teams (Eligio et al., 2012). In contrast, task conflict is usually related to differences in opinions about group tasks and work-related issues, and, consequently, it could be less likely to interfere with the willingness to trust in colleagues, even when team members have to interact and perform their tasks in face-to-face environments. In fact, there is evidence that the negative association between task-related conflict and both group member satisfaction and team cohesion is weaker compared to relationship conflict (De Wit et al., 2012), which suggests that task-related disagreements, compared to relationship conflicts, also have a less adverse impact on other proximal outcomes, such as team trust. These findings may indicate that the protective effect of virtuality on team trust within hybrid teams could be more effective when the conflict is task-related because, even when teams have a moderate level of virtuality, the conflict does not interfere with the perception of trust. When conflict is relational, team trust is not negatively affected by disagreements between members, but only in high virtuality conditions. These results could be explained by our two former arguments. First, based on attributional theories (e.g., Kelley, 1973), team members may be more likely to attribute task-related misunderstandings, compared to

those related to relational issues, to situational factors associated with the use of technology, rather than making dispositional attributions based on personal characteristics or lack of competences. And, when conflict in virtual teams is explained by situational factors, team members tend to solve it using more collaborative strategies (Kankanhalli et al., 2006). In these conditions, team trust should be less affected by conflict as disagreements tend to be solved considering the interests of all team members. Second, when the tension between team members is perceived as being based on different opinions about team tasks, rather than on personal incompatibilities, members may be more careful when expressing their opinions or feelings. They may avoid displaying negative emotions in order to preserve intragroup trust, which is considered a more important condition for teamwork in virtual environments (Breuer et al., 2016; Haines, 2014; Muethel et al., 2012) and more fragile and difficult to maintain in dispersed teams (Jarvenpaa et al., 1998; Jarvenpaa & Leidener, 1999).

Hypotheses 3 and 4 were partially supported by the results obtained with hybrid teams. Indeed, only team cognitive trust showed a positive relationship with both outcomes (team performance and team innovation). Moreover, virtuality moderated the negative mediated relationship between both task and relationship team conflict and team outcomes only through cognitive trust. Particularly, these mediated associations were only significant when teams had lower levels of virtuality. Thus, Hypotheses 5a and 5b were only partially supported by the results. Overall, our results are in line with research that points to the central role of cognitive-related trust in team effectiveness (Khan et al., 2015) and, specifically, with studies conducted in virtual contexts that suggest that cognitive trust also seems to have greater importance than affective trust in virtual teams (e.g., Kanawattanachai & Yoo, 2002). As in traditional teams, in teams with some degree of

virtuality, the perception of a higher level of cognitive trust among colleagues may also increase team members' willingness to more openly share the necessary information for goal achievement and favor the acquisition of shared knowledge about the competence and reliability of other group members (Zornoza et al, 2009). However, the physical distance of team members who communicate through technology could impair the development and maintenance of emotional care and investment in colleagues (Bierly et al, 2009). Therefore, affective ties among team members may be less relevant for members of hybrid teams than for those in face-to-face teams, which contributes to explaining why, in our research, affective trust was not related to team performance and innovation.

### **Practical implications**

In general, the results draw attention to the buffering effect of virtuality in protecting team trust from the negative effects of conflict, and the pivotal role of cognitive trust as an antecedent of team performance and innovation. These findings have important implications for team management, particularly for teams that are neither purely virtual nor entirely face-to-face, but instead vary in the time spent interacting with colleagues using computer-mediated communication technologies.

First, the creation of an environment of trust among members of hybrid teams, especially for those who mostly interact face-to-face, can be a key factor in the results achieved by the team (Breuer et al., 2016; Jarvenpaa et al., 1998). Fostering the perception of colleagues as trustworthy in terms of their competences and professional credibility could prevent the detrimental effects of conflict on team effectiveness when team members regularly communicate in face-to-face settings.

Second, virtuality can be protective of team trust because the findings indicate that, beyond a certain level of virtuality, team conflict does not interfere with trust between

members of hybrid teams. Specifically, in comparison with task conflict, relationship conflict negatively affects team trust at lower levels of virtuality. Thus, managers and team leaders should be aware of signs of task conflict in hybrid teams, particularly during in-person contact in the work context. They should also consider the possibility of increasing the virtuality level of team tasks in order to prevent the escalation of conflict, given that task conflict can lead to relationship conflict, particularly in a low-trust environment (Curşeu & Schruijer, 2010; Peterson & Behfar, 2003), due to misattributions of task conflict as relationship conflict (Simons & Peterson, 2000). Hence, computer-mediated communication can facilitate task division among team members that can easily be reorganized when task-related disagreements arise (De Jong et al., 2008), thus preventing unfavorable consequences for team trust and team effectiveness.

In sum, virtuality should be seen by managers and team leaders as an important work tool that, under certain conditions, can promote team trust and increase team effectiveness. Although these changes in the way employees work and collaborate were already occurring before the Covid-19 pandemic, this situation has suddenly and dramatically required almost every employee to work remotely. According to George et al. (2020, p.1), the pandemic has probably created “the most significant organization design shock of our lifetimes”. In terms of teamwork, the pandemic has imposed the need to work together and interact using a range of technologies: e.g., messaging and video conferencing systems, collaborative editing suites. And, surveys conducted by various consultant companies in different countries show that, even after the pandemic is under control, most people would prefer to work remotely a few days a week (e.g., Ferreira et al., 2020). Therefore, we must accept that the increasing incidence of virtuality in our daily work routines and interactions with colleagues is not transitory; instead, it is here to stay.

## **Limitations and further research**

Although our findings make several contributions to the literature and to practice, there are also limitations that should be mentioned. One of the limitations has to do with the cross-sectional nature of our design, which conditions the establishment of casual-effect relationships. Regarding the influence of team conflict on team trust, for instance, although the literature shows that team conflict undermines the development of team trust within the team (e.g., Langfred, 2007), the opposite direction could also be conceptualized. Indeed, results found by Curşeu and Schruijer (2010) revealed that trust that emerges in the first stages of team development negatively predicts both task and relationship conflict in later stages. In the future, a longitudinal study should be implemented to overcome this limitation. Additionally, although the level of virtuality of the teams included in the study, considering De Jong et al.'s (2008) indicator, ranged from 9.0% to 94.9%, only approximately 20% of the teams had a level of virtuality greater than 50%. Thus, further studies should attempt to include teams with higher levels of computer-mediated communication.

Information about team conflict and team trust were obtained at the same moment from the same source, which poses the risk of common method variance (Conway, 2002). However, the aggregation of the data to the team level can attenuate this threat (Spector, 1987). Additionally, a different source was used to assess the criterion variables (i.e., the leader), which helps to diminish the risk of the results being undermined by common method variance.

Emotions are an essential element in conflict situations (Jehn, 1997). Indeed, team conflict, regardless of its type, involves stress and tension. At the same time, expressing emotions in virtual contexts might be difficult due to the challenges of technology (e.g.,

difficulties in nonverbal communication expression) (Stephens et al., 2013). Accordingly, future studies should explore the role of emotions and emotional expression during conflict in hybrid teams. A further study in this area could also be enriched by the use of behavioral data because this kind of information tends to be closer to the phenomena of interest (Baumeister et al., 2007). For instance, virtual interactions (e.g., messages through instant messaging software, emails) between team members could be explored and analyzed to identify the presence of conflicts and the expression of emotions.

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