

# AN EXPLORATION OF PSYCHOLOGICAL SAFETY AND TEAM BEHAVIORS IN A CONSTRUCTION GLOBAL TEAM

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## ABSTRACT

Psychological safety is a construct that has garnered attention in academia and industries over the last two decades. Research has shown the connection between psychological safety and several team behaviors, from learning to active caring. Most research however has focused on exploring psychological safety within traditional teams. This paper extends the research on psychological safety by capturing the psychological safety and behavioral dynamics of a global virtual corporate team in the construction industry. We found that psychological safety positively relates to some behaviors such as making reliable promises and active listening, and these in turn positively relate to better team performance. This paper also describes actions the team in the study committed to follow to improve, based on the assessment conducted in this study. Future research should concentrate on using longitudinal assessments to explore variations within the team over time and understand what interventions can improve team dynamics.

## KEYWORDS

Psychological safety, behaviors, team dynamics, global teams, learning, reliable promising.

## INTRODUCTION

Edmondson and Bransby (2023) highlighted the boom of research focused on psychological safety due to the recognition of the “challenge of navigating uncertainty and change.” Psychological safety has been studied in-depth in many industries such as healthcare, manufacturing, and technology. However, its exploration in the construction industry is still nascent (Shen et al. 2015; Gomez et al., 2019; Gomez et al., 2020; Gomez, 2023). Moreover, the literature exploring psychological safety in construction is limited to studying project teams working geographically together to deliver a construction project.

A team is a “collection of individuals who are interdependent in their tasks, who share responsibilities for outcomes, who see themselves and who are seen by others as an intact social entity embedded in one or more larger social systems (for example, business unit or the corporation), and who manage their relationship across organizational boundaries.” (Cohen & Bailey, 1997). Psychological safety within a team depends on a number of variables such as

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interpersonal relationships, organizational norms (Kahn, 1990), leader behavior, group dynamics, trust and respect, organizational context (Edmondson, 1999; Zhang et al., 2010). Psychological safety is established through interactions in which team members make assessments of how they treat one another (Duhigg, 2016; Gomez et al., 2019). For instance, leaders using hostile verbal and non-verbal behaviors can negatively affect their team psychological safety (Tepper, 2000; Burris et al., 2008; Agarwal & Anantatmula, 2021). However, leaders using inclusive behaviors can positively affect psychological safety (Feitosa & Salas, 2021). Psychological safety is a key differentiating factor in understanding teams that thrive and learn together versus those who build defensiveness routines (Argyris, 1985; Schein, 1985; Schein, 1992; Edmondson, 1999). Such routines, typically triggered for personal protection, can hinder the team learning process (Sternman, 1994). Many studies explored the role of psychological safety on team behaviors (what we refer to as team dynamics), from learning with the seminal work of Edmondson (1999) to speaking up, (Detert & Burris, 2007) to being respectful and actively caring for others (Gomez et al., 2019; Gomez et al., 2023), etc.

The purpose of this study is threefold. First, we review the literature on psychological safety, team dynamics, and global teams. Second, we explore these within a specific team: a corporate services global team that oversees the quality department for general contractor company with presence in America, Europe, and Asia. To the authors knowledge, this is the first study focused on understanding psychological safety in a global team in the construction industry. Third, we describe some actions the team decided on taking that can lead to further improvements. The following questions were explored in this study:

- *RQ1: what is the relationship between psychological safety and team behaviors in a global team?*
- *RQ2: what actions can global teams take to foster psychological safety?*

## LITERATURE REVIEW

### TEAMS IN THE CONSTRUCTION INDUSTRY

Most teams in the construction industry are assembled at the project level with people from diverse backgrounds (e.g., builders, architects, electrical engineers) who come together temporarily with one objective, delivering a project within certain constraints (Jefferies et al., 1999). Although team members share this common goal, each might have their own priorities ranging from job stability to optimizing the profitability of their companies. These teams need to learn quickly how to work together as a team and build the project to achieve the expectations safely using the resources they have (Cornick & Mather, 1999). Other teams, typically at the corporate service level, are assembled for longer durations to plan corporate strategies concerned with “operations of the entire organization” (Cheah & Garvin, 2004).

Project and corporate teams’ complexity may vary depending on several factors, from team size to geographical distribution (e.g., teams being co-located versus geographically dispersed) to diversity of skills and backgrounds. Corporate teams of large multinational corporations, the core of this research, typically function as global virtual teams. Our understanding of global virtual teams is those who are constituted by “geographically and culturally dispersed individuals assembled through communication technologies” (Massey et al., 2003).

### CHALLENGES IN GLOBAL TEAMS

Development Dimensions International (DDI) et al. (2018) analyzed leadership readiness in this digital era and reported that *leading virtual and remote teams* is still a weakness in leaders’ readiness and suggested paying attention to developing this competency. Some of the challenges when working in these teams include:

- Communication problems and misunderstandings due to different languages (Chen et al., 2006). Positives of global teams (e.g., diversity of perspectives) can be hindered if members are not able to communicate effectively (Berg & Holtbrügge, 2010).
- The lack of social cues in virtual meetings, such as eye contact or voice inflections (Straus & McGrath, 1994), make it difficult to assess participants' reactions or engagement.
- Higher instances of members feeling isolated or getting distracted (Edmondson & Daley, 2020).
- Cultural differences and its impact on how people interact with each other, including individualism-collectivism, power distance, masculinity-femininity, uncertainty avoidance (Hofstede, 2001; Hofstede et al., 2010).

Dusenberry and Robinson (2020) highlighted a common but probably wrong assumption. They said, “we (when working in teams) assume that how to collaborate is already known or emerges from practice.” However, global virtual teams may struggle with less cohesion, engagement, and satisfaction (de Pillis & Furumo, 2006), resulting in lower productivity than face-to-face teams (Straus & McGrath, 1994). One mitigating strategy to the challenges faced in these teams is fostering psychological safety (Gibson & Gibbs, 2006; Feitosa & Salas, 2021).

## **TEAM DYNAMICS: PSYCHOLOGICAL SAFETY AND TEAM BEHAVIORS**

Literature that explores speaking up and the organizational conditions that favor voice or silence behavior have looked at several things, from the individual's personality and characteristics (e.g., LePine & Van Dyne, 1998) to their attitudes (e.g., Rusbult et al., 1988) to their assessment of whether it is safe for them to speak up (e.g., Edmondson, 1999, Milliken et al., 2003). For the latter, people assess the perceived costs of speaking up to themselves (e.g., humiliation, termination) in order to decide whether to do so (Edmondson, 1999; Gomez et al., 2019).

Cheah and Garvin (2004) suggested that organizations should treat human resources (the people in a team) as one of the building blocks of corporate strategy. They pointed out that a “new technological process in construction by itself may not create a sustainable advantage unless the process also draws support from proper human resource strategy (e.g., a proper training program in place).” Given that the attention to the construct of psychological safety in construction is growing, understanding how it applies to global teams in this context is critical for the development of corporate strategies. To illustrate, psychological safety can help corporate teams deciding what efforts to pursue by improving the concept screening process used to assess go/no-go decisions for moving forward with an idea (Cole et al., 2022)

Psychological safety is one of the most important factors distinguishing high-performing teams from average ones (Rozovsky, 2015). Researchers have found positive correlations among psychological safety and learning, performance (Edmondson, 1999), knowledge creation (Cauwelier et al., 2019), knowledge sharing (Mura et al., 2016), creativity (Agarwal & Farndale, 2017; Liu et al., 2021), innovation (Gu et al., 2013). Gomez (2023) conducted a number of case studies and analyzed how psychological safety impacted team members' behaviors such as active caring, active listening, and making reliable promises. A team's psychological safety and the behaviors displayed in this context represent what we understand as the team dynamics (i.e., how a team functions together). Gomez' work was focused on teams managing quality, therefore we used her framework to explore the team dynamics for this research.

## **LEADING GLOBAL TEAMS**

Knowing that psychological safety creates favorable conditions for speaking up (Edmondson, 1999, Edmondson & Bransby, 2023), a number of leadership constructs have been studied as

precursors to psychological safety, e.g., leader-member exchange (Cong et al., 2023), inclusive leadership (Carmeli et al., 2009), shared leadership (Gu et al., 2016). Detert and Burris (2007) highlighted the importance of leaders in fostering psychological safety to promote voice behavior. He said, “a subordinate’s current overall performance likely includes his/her manager’s reaction to prior speaking up.” Due to the key role of leaders in driving or not a psychologically safe work environment, we highlight some of the strategies to lead these teams:

- Take advantage of virtual platforms to get to know each member at a deeper level (Feitosa & Salas, 2021). For instance, recording sessions when deemed necessary to allow access to those who cannot join the meeting live, facilitating connections through virtual happy hours, encouraging e-introductions when new members join, setting time aside in team meetings to allow and promote members participation in the conversation.
- Design strategies to allow team members socialize and get to know each other in a personal way (Lagerström & Andersson, 2003; Ford et al. 2017).
- Model behaviors that enhance psychological safety such as listening, competence, and transparency (Edmondson & Bransby, 2023).

Edmondson and Daley (2020) said that “(virtual) teams can be lonely places... building psychological safety in virtual teams takes effort and strategy that pays off in engagement, collegiality, productive dissent, and idea generation.” Team dynamics may improve when people are well acquainted as members feel more psychologically safe, improving therefore the team’s effectiveness and efficiency (Chevrier, 2003)

## **METHODOLOGY**

We used an exploratory case study (Yin, 2013) to conduct a detailed analysis of a particular team, explore its dynamics, and describe the opportunities for improvement proposed. Our case is a team within a company that placed among the top 10 of the Engineering News Record’s 2023 Top 400 Contractors ranking. This team, known internally as the “Quality Leadership Network (QLN)”, had 16 active members at the time the study took place.

We used a questionnaire to assess the constructs of our study (i.e., psychological safety and team behaviors) from a single global team. The questionnaire included some questions measured on a 7-point Likert scale that were adapted from prior research, and some open-ended questions (see full list of questions used in Gomez (2023)). Participation was voluntary and individual responses were kept confidential and reported at a team level for research purposes.

The numbered questions were used to measure the team dynamics on a scale. The open-ended questions were used to gather participants input on what actions their team could take to help them feel safer. This input served the team to discuss how to nurture the desired behaviors to continuously grow and commit to specific actions for improvement.

## **RESULTS AND DISCUSSION**

A total of 12 team members answered the questionnaire, representing a 75% participation rate. We included the following control variables: (1) team tenure (time spent working with this team), (2) company tenure, and (3) role. Members of this team played one of the following roles: quality engineer, quality manager, project manager, or superintendent. Other control variables (e.g., ethnicity, race, age, gender) were not included due to the team size limitation.

## **PSYCHOLOGICAL SAFETY, TEAM BEHAVIORS, AND PERFORMANCE**

Although some authors measure psychological safety at the team level using one score only, combining team members’ perspective regarding their coworkers and supervisors, we used Gomez’ (2023) scale that assesses psychological safety, both in relation to coworkers and to

supervisors separately. Past research shows that supervisor behavior is “one of the most important sources of cues about whether it is worthwhile and safe to voice” because they are typically the target of voice and because of the power they hold over employees’ outcomes such as promotions and pay (Morrison 2011). However, the influence of coworkers on employee behaviors has also a role to play on whether they are more willing to speak up, e.g., by modeling speaking up (Subhakaran & Dyaram, 2018; Ng et al., 2021). Construction, particularly, can be a very hierarchical industry so we treat psychological safety with respect to both targets as separate but related facets. A high score indicated high levels of psychological safety. Sample items include, “I am able to bring up problems and tough issues to my team leader”, and “If I make a mistake while doing my work on this team, I feel safe speaking up to my team leader.”

Table 1 shows the results for the team members’ perception of psychological safety broken down with respect to the team leader and their coworkers. Table 2 breaks down the results by tenure. Previous studies measuring psychological safety by tenure identified some curvilinear relationship between psychological safety and team tenure (Koopmann et al., 2016) while others suggest a positive relationship between tenure and voice behavior (Detert & Burris, 2007; Burris et al., 2008), which can be partially attributable to psychological safety. Due to the team’ sample size, we cannot make an assessment with statistical validity, but results show more variation when comparing tenure in team versus tenure in company, which is consistent with the construct of psychological safety measured at the team level.

Table 1: Team Psychological Safety Results (1=low, 7=high psychological safety)

Psychological Safety in Relation to	Team Perception
Team leader	5.604 (sd=0.98)
Coworkers/other members of your team	5.833 (sd=1.18)

Table 2: Team Psychological Safety Results by Tenure (1=low, 7=high psychological safety)

By Team Tenure	By Company Tenure	Team Psychological Safety
< 1 month		4.188
1 – 6 months		5.938
6 – 12 months		6.281
> 1 year		5.742
	1 – 5 years	5.800
	5 – 10 years	5.828
	> 10 years	5.438

The open-ended responses provided more insight into what the team was doing well to foster psychological safety. These responses can be used to foster awareness and reinforce the actions that were helping the team move toward a more psychologically safe environment. Examples below illustrate the team’s input:

*“I feel my team provides a lot of comfort when it comes to discussing day-to-day issues or upcoming deadlines. I don’t feel like I have a fear of speaking up or mentioning something that I feel would improve our processes.”*

*“I feel extremely blessed to be a part of [this team]. I hope that we can be the leading example for other work groups within [our company].”*

Some opportunities for improvement were also raised, which were used along with the team dynamics assessment in the team’s brainstorming session to determine actions moving forward:

*“I would say an opportunity for improvement could be to assure that the team is doing well outside of work as well... Opening the floor to the team to talk about external problems that may be affecting their work could be a way the team feels more supported.”*

*“I’ll avoid bringing up simple issues, as I do not match the academic or professional status as others have.”*

*“Create more vulnerable moments within the team. Give the team members more opportunities to participate.”*

Our study of team dynamics included measuring the behaviors described in Gomez (2023) due to its relevance for a corporate team managing quality. We used the questions developed in that study to assess each of the behaviors shown in Figure 1. To illustrate, a sample item to assess the behavior of *being respectful* was, “Members of my team are valued and their contribution to the team matters.” Similarly, an item to assess the behavior of *making reliable promises* was, “Members of my team make sure there is clarity around acceptance criteria before proceeding.”

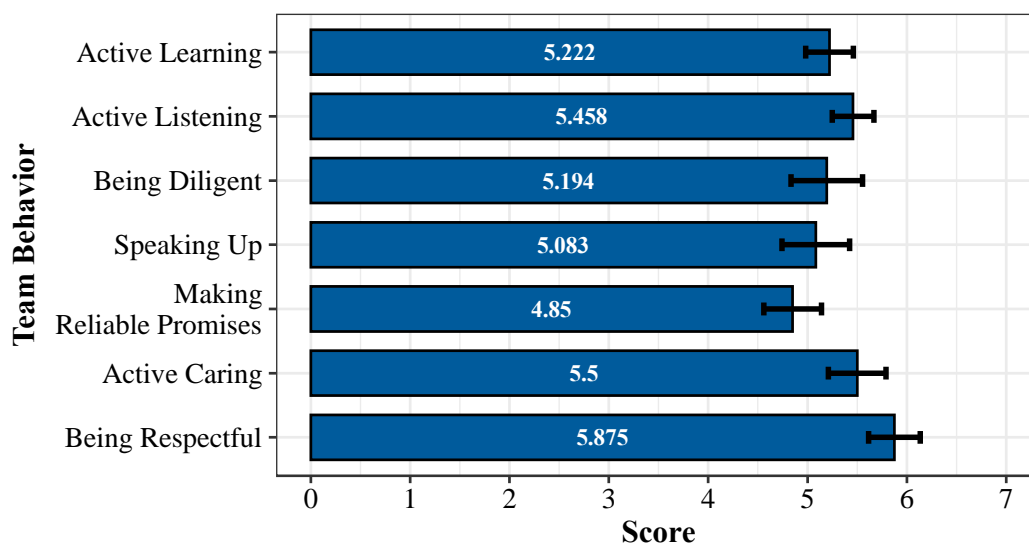


Figure 1: Team Behaviors Assessed

Measuring the team dynamics by breaking the analysis down to specific behaviors helped the team to analyze their strengths and opportunities for improvement on specific areas. These behaviors, connected through social interactions, are intertwined. In some ways, psychological safety promotes respect and respect promotes psychological safety. For instance, when individuals feel psychologically safe and express their ideas, others will react in ways that show respect and appreciation. Similarly, when team members are trusted to act independently, they perceive a sense of well-being and respect that in turn fosters psychological safety (Fenner et al., 2023). Actions the team decided to implement based on analyzing these results are described in the next section.

We also measured performance using the questions developed in Gomez (2023). Table 3 shows the correlations we found between our study variables, grouping the behaviors we deemed to study as one variable called “desired team behaviors.” As shown, psychological

safety is highly correlated to the behaviors we studied ( $r = 0.729$ ), and this, in turn, is highly correlated to team performance ( $r = 0.909$ ).

Table 3: Correlations of Study Variables

<b>n = 12</b>	<b>Psychological Safety</b>	<b>Desired Team Behaviors</b>	<b>Team Performance</b>
<b>Psychological Safety</b>	1.000	0.729	0.691
<b>Desired Team Behaviors</b>		1.000	0.909
<b>Team Performance</b>			1.000

All correlations shown in this table are significant at  $p < 0.01$

Since the sample size in our study is limited, we cannot properly make statistical conclusions. However, our results are consistent with past studies that identified positive relationships, for example, between psychological safety, team behaviors such as learning, and resulting performance (Edmondson, 1999; Wilhelm et al. 2019; Gomez, 2023), psychological safety, learning, and knowledge creation (Cauwelier et al., 2019), and listening, psychological safety and creativity (Castro et al., 2018).

## TEAM'S ACTIONS FOR IMPROVEMENT

Reviewing the team dynamics assessment results allowed the team to start acting on it. The team hosted a start-stop-continue working session to analyze the study results and brainstormed ideas for a path forward. Some of the actions the team decided to take included:

- Launch a book club to dive deep into specific concepts. Salas et al. (2008) found that training may improve a team's outcomes. Dusenberry and Robinson (2020) proposed that psychological safety can be improved through training interventions that can foster personal awareness of how team members depend on each other for their teams to be successful. For instance, the team behavior that needed further improvement per the survey was making reliable promises. The team committed to go over the seminal book *Conversations for Actions and Collected Essays* from Flores (2012).
- Be intentional in celebrating big and small wins as a team and keep shoutouts as an agenda item consistently in weekly team meetings. Team leaders inviting and showing appreciation for other member's input fosters psychological safety (Nembhard & Edmondson, 2006) and therefore members participation and engagement (Carmeli et al., 2009; Zhang et al., 2010).
- Continue hosting an annual in-person meeting. Dixon (2017) described an in-depth study of a virtual team that used face-to-face interactions as part of their strategy to facilitate learning and foster psychological safety. Some strategies he highlighted for these in-person meetings included, for example, having the team codesigning an agenda, and the use of facilitators and whiteboards to encourage experimentation. This leader in this team stated how he envisioned these meetings to help the team, "In order to advance our team, it was critical that we met face-to-face at least once over the year. The focus of our in-person meeting was largely on fostering trust, openness, and to create alignment around our goals and priorities. All too often remote teams use the face-to-face meeting formats to get as much done as possible and miss the critical (and often only) time to truly align the team culturally."

- Use video in virtual meetings, to the extent possible. Ford et al., (2017) suggested that leaders in virtual environments should use gestures (e.g., facial expressions to convey emotions and show attentiveness, smiling to create a welcoming atmosphere, nodding to indicate agreement or understanding) and be trained on virtual skills such as detecting early signs of conflict or withdrawal (e.g., lack of eye contact, participants joining late or leaving early consistently, frowning eyebrows but not voicing their thoughts).
- Align on weekly meeting rules regarding content and format (e.g., making sure an agenda is sent out before meeting, so members know what the meeting purpose and topics are ahead of time, avoiding running over time as participants may have other commitments to attend, rotating meeting facilitators).
- Spend time on project sites to oversee the implementation of corporate strategies and provide feedback to the team (e.g., what processes project teams are struggling with, what resources they need).
- Assess team dynamics once a year, review commitments from prior year, and rethink actions for improvement (interventions) for the upcoming year. The team leader pointed out that this assessment was a critical step in the endeavor of creating an environment where deeper conversations can occur, one of psychological safety.

Additional opportunities to explore from the literature include:

- Considering the challenges of global teams due to a number of cultures coming together, conduct interventions that focus on cultural intelligence, which is a “person’s capability to adapt effectively to new cultural context” (Earley & Ang 2003, p. 59).
- Deliberately plan interventions to foster open communication and make interventions team-specific. Cong et al. (2023) suggested that “high-quality exchanges with leaders help improve the psychological safety of construction workers.” Also, Dusenberry and Robinson (2020) described that when training is specifically designed for a target, it increases “personal awareness of interdependence among team members.”
- Modeling the behaviors expected from the team so others can imitate them. The social learning theory suggests that behaviors can be acquired through role modeling, involving the observation of others’ behaviors and their associated consequences (Bandura, 1977). Other team members’ behavior plays a key role in creating psychologically safe spaces (Subhakaran & Dyaram, 2018; Gomez et al., 2019; Ng et al., 2021). For instance, if team members observe that speaking up to share mistakes is not only encouraged but welcomed and rewarded in the team, resulting in the person getting help to solve the mistake rather than punishment, then they would be more willing and open to sharing when they make a mistake rather than trying to hide it.
- Design actions to strengthen coworker-to-coworker and supervisor-worker communication. Both coworkers and supervisors have great influence on shaping employees’ beliefs about what behaviors are acceptable and valued in the team (Zohar & Polachek, 2014; Gao et al., 2016).

## CONCLUSIONS

Research on psychological safety, although prominent in many industries, has “largely studied old-fashioned intact teams” (Edmondson & Bransby, 2023). Our study represents the first attempt to document psychological safety and the behavioral dynamics of a global virtual team in the construction industry. Our findings have important implications in practice. We confirmed a relationship identified in past studies between psychological safety, learning, and team performance for a “non-traditional” team. In addition, we extended this analysis to explore whether this relationship remains for other behaviors such as making reliable promises. Teams



looking to nurture the behaviors assessed here can start paying attention to also fostering psychological safety, so these behaviors occur more naturally. Further, we described actions that this team committed to do for improvement based on the team dynamics assessment used. While the impacts of these actions had not been analyzed yet, they serve as inspiration for other teams trying to foster similar team dynamics or struggling with the challenges of global work.

This research explored psychological safety and its implications in one global team, which poses some limitations. First, generalizability of our findings is limited. Our sample, even though representative for the team considering its participation rate, is small and only represents the results of a single team. Although not a large enough sample to undertake reliability analysis of the constructs used in this study, we used previously designed instruments that showed reliability in Gomez (2023). Second, because our study describes the team dynamics at a single point in time, we cannot predict the impact of the actions for improvement the team designed as a result of the initial diagnosis. Little research exists about what creates psychological safety and the longitudinal nature of team dynamics (Dusenberry & Robinson, 2020; Edmondson & Bransby, 2023), highlighting the need to first understand how these dynamics shift over time and second to identify specific interventions that can facilitate building psychologically safe environments. A longitudinal study with this team over several time periods, currently planned, could provide a better understanding of the results of implementing the efforts for improvement proposed. Third, this case study is limited to one global team in the construction industry. Future research could include cross-team and company comparisons, within construction and other industries, using longitudinal data to assess whether the relationships found in this study represent other contexts and are maintained over periods of time, or the nuances that can be observed.

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