

# The nature and relevance of team grit

## Postprint

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**Purpose** – This research investigates the nature of the team grit construct as distinct from individual grit and determines its relevance within a net of team constructs.

**Design/methodology/approach** – Using a new, validated, and invariant team grit scale, the study confirmed the factor structure of a scale in a United Kingdom sample ( $N = 228$ ), tested the discriminant nature of individual and team grit, and examined relationships between proposed antecedents and outcomes of team grit in a United States sample ( $N = 269$ ). We applied structural equation modeling to analyze the data.

**Findings** – Our results revealed the relevance of this goal-focused team construct. We show that team grit is distinct from individual grit and preceded by team psychological safety and team goal commitment, and predicts team innovation, and team work engagement.

**Originality** – The research offers the first empirical investigation of the relationships of team grit in organizations with other team constructs.

**Research limitations/implications** – The team grit scale used in this study provides new opportunities to understand team grit in organizational settings.

## 1. Introduction

Teams play a crucial role in effective organizations (e.g., Otache, 2017) and goal attainment is an essential part of team effectiveness (Mehta and Mehta, 2018; To *et al.*, 2023). Goal attainment is often influenced by individual grit, which refers to “perseverance and passion

for long-term goals” (Duckworth *et al.*, 2007, p. 1087). Unfortunately, despite the centrality of goals in team effectiveness, the collective state of grit in teams has not been sufficiently studied. One extant paper theorizes the nature of team grit, suggesting that it is a compilation of individual team members’ grit (Bernardy and Antoni, 2021). However, team constructs differ from individual constructs because of an element of interdependence that is core to team constructs (Stoverinck *et al.*, 2020). Moreover, the scope of other team constructs, such as team resilience (Sharma and Sharma, 2016), exclude the significant aspect of team goals. There is currently no empirical evidence of the importance of team grit for organizational outcomes, despite theories about such relationships.

It is well-known that team psychological safety drives team learning and performance (Edmondson, 1999). As a central construct in team effectiveness, we ask whether team psychological safety enables team grit. Prior research has shown that team goal commitment encourages team performance among several positive team effectiveness outcomes (Aubé and Rousseau, 2005). Because team grit denotes collective perseverance toward achieving long-term goals, it is also important to ask whether team goal commitment enables team grit. Furthermore, our research considers whether team grit predicts team innovation (Mitchell *et al.*, 2022) and team work engagement (Costa *et al.*, 2014) as examples of team effectiveness.

In this study we advance the empirical foundation of team grit as a collective construct and a goal-based team effectiveness construct. The work is derived and developed from the unpublished scale development study of Buchel (2023) and contributes to a better empirical understanding of team grit as an enabler of team effectiveness. Understanding the nature and relevance of team grit provides practitioners with valuable insights on how to develop grit within teams.

## **2. Literature review**

### **2.1 The nature of team grit**

In an attempt to establish why some equally intelligent people achieve more than others, Duckworth and colleagues conceptualized individual grit as “consistency of interest” (passion) and “perseverance of effort” (Duckworth *et al.*, 2007), and, in some cultures, “adaptability to situations” (Datu *et al.*, 2017). Gritty individuals pursue their goals with stamina and single-mindedness, even when facing failure and setbacks. Higher-order and meaning-giving goals are particularly met with perseverance in challenging situations (Jordan *et al.*, 2019). Duckworth *et al.* (2021) argued that passion and perseverance are distinct, but related, tendencies in the pursuit of long-term goals.

Individual grit relates to many positive outcomes, such as self-control (Duckworth and Gross, 2014), perseverance in difficult scholarly programs (Eskreis-Winkler *et al.*, 2014), and good work-related ethics (Meriac *et al.*, 2015). Further outcomes of grit include, *inter alia*, academic goal attainment (Duckworth *et al.*, 2007), business success (Mueller *et al.*, 2017), and emotional benefits (Lucas *et al.*, 2015; Salles *et al.*, 2017). The positive outcomes of grit are mostly due to perseverance of effort. Other contingencies, such as the domain in which performance is measured, or the level of grit, play an important role in the direction of the outcomes of grit (Credé *et al.*, 2017). Hence, grit may also lead to negative outcomes, such as unethical behavior. Individuals who passionately persevere to achieve their goals are also more likely to lie in the process (Arli *et al.*, 2020). Gritty individuals may also persevere beyond the point of it being beneficial when they do not give up even if they continue to fail (Lucas *et al.*, 2015). Although the concept of grit has been criticized for its measurement dimensions (Credé *et al.*, 2017), it is conceptually distinct from related constructs. Three elements that distinguish grit from other constructs are combined passion, perseverance and a goal-orientation (Duckworth *et al.*, 2021).

Individual grit is well established in literature, but grit has not been studied sufficiently as a collective construct. There are several reasons why grit will manifest as a distinct collective construct in teams. Work teams comprise multiple people who share at least one goal and are interdependent based on work tasks and social relations (Kozlowski and Bell, 2013). Being more than the sum of the individuals, team traits and behaviors emerge over time and through mutual interactions (Morgeson and Hofmann, 1999; O’Neill and Salas, 2018). Accordingly, when team members work together over time, the team develops unique collective traits that differ from those of its individual members. The interdependence of team members differentiates a team construct from its individual counterpart (Stoverink *et al.*, 2020). Hence, the mutual reliance of team members on each other creates a collective team dynamic. Salas *et al.* (2005) describe the shared understanding of team goals as shared mental models. The common understanding in teams helps them to achieve and continually update their goals.

Team-level qualities however develop through the mechanism of emergence (Morgeson and Hofman, 1999). Emergent states are described as “cognitive, motivational, and affective states of teams [that are] ... dynamic in nature and vary as a function of team context, inputs, processes, and outcomes” (Marks *et al.*, 2001, p. 357). As team situations change, the state of the team will also shift, implying that team grit is not a constant state in teams. Collective states develop as a result of collective actions (Morgeson and Hofman, 1999). Accordingly, team states arise from what the team does together. Therefore, scholars define team-level constructs as states of interconnectedness. For instance, Stoverink and colleagues (2020) emphasized “sharedness” as a trait that distinguishes team resilience from individual resilience. Likewise, Sharma and Sharma’s (2016) team resilience instrument incorporates team traits such as collective efficacy. Therefore, we regard the related but different construct of team grit as an emergent state and process of teams. Accordingly, individual grit is often

compared to a personality trait (Duckworth *et al.*, 2021), whereas team grit is a team state and a function of collective emergence and represents team members' interdependence (Tasca, 2020).

Recent studies have shifted attention to exploring grit at the collective level. Lee and Duckworth (2018) proposed the notion of organizational grit, which denotes a culture in which organizations have a clear goal hierarchy and are ambitious, inspirational, experimental, and open to failure and course correction. Among the characteristics of organizational grit, such as willingness to learn, is the notion of team unity. Team unity (Lee and Duckworth, 2018) encourages high performance (de Waal *et al.*, 2023; Luning *et al.*, 2022).

Literature describes gritty teams as those that have a desire to work hard and develop, are resilient, and have a strong sense of purpose and interpersonal trust. Furthermore, theory suggests that gritty teams, which are adaptive, pursue higher-level goals. Collective grit depends on a mutual awareness of and dedication to a shared purpose, and develops because of strong, trusting relationships (Lee and Duckworth, 2018). Bernardy and Antoni (2021) proposed the first definition of team grit as “a team’s competence to pursue common long-term goals despite adversities with passion and perseverance” (Bernardy and Antoni, 2021, p. 68). This definition is theoretical, emphasizing the need for empirical studies into the nature and relationships of team grit. The authors referred to perseverance as “a strong willingness to exert effort towards the team’s common goal and not give up despite difficulties” (Bernardy and Antoni, 2021, p. 68). Moreover, they theorized that gritty team members motivate one another through internal support, encouragement, and togetherness, leading to teams’ ability to innovate. This interpretation of team grit, although describing the phenomenon and proposing its relationships, has not yet been supported empirically.

Team grit is distinguishable from similar constructs such as team resilience (Sharma and Sharma, 2016), which is measured as the team's response to adversity, efficacy, mastery, and structure. Instead, team grit is goal-oriented and does not require adversity to appear. Team grit also differs from the individual trait of conscientiousness which refers to traits such as self-discipline, industriousness, and dependability (Phillips *et al.*, 2024). A distinction between individual grit and team grit offers the departure point for the measurement of team grit. Individual grit literature suggests the salience of "passion", "perseverance", and "adaptability" (Datu *et al.*, 2017; Duckworth and Quinn, 2009). Nascent team grit literature (Bernardy and Antoni, 2021; Lee and Duckworth, 2018), however, suggests the goal-related (e.g., desire to work hard and purpose) and cohesion-related (e.g., mutual commitment, trust, encouragement, and unity) characteristics of team grit. The theoretical differences between individual and collective grit leads to our first hypothesis:

*H1: Team grit is distinct from individual grit.*

## **2.2 Theoretical relevance of team grit**

Based on an open systems theory perspective (Katz and Kahn, 1978), inputs in a system support the emergence of a team construct, which in turn leads to team and organizational outcomes. In this study, we hypothesize that team goal commitment and team psychological safety support the emergence of team grit, thereby engendering positive outputs such as team work engagement and team innovation.

Bernardy and Antoni (2021) proposed that team psychological safety strengthens team innovation through team grit. Team psychological safety represents the "shared belief held by members of a team that the team is safe for interpersonal risk taking" (Edmondson, 1999, p. 354). In psychologically safe teams, team members can voice their opinions without fearing negative psychological outcomes. Team psychological safety enables team resilience

(Stoverink *et al.*, 2020), a construct that shares the persistence component, but not the passion component, of grit. Team psychological safety also serves as a requirement of team effectiveness, as it supports team viability (Dimas *et al.*, 2023). Hence, we hypothesize that:

*H2: Team psychological safety is positively associated with team grit.*

Considering that individual grit presupposes perseverance toward goals, we propose that team goal commitment relates to team grit. Team goal commitment represents a shared sense of connection to the team goals and the determination to attain these goals (Weldon and Weingart, 1993). The relationship between team goal commitment and team performance is strengthened when teams have interdependent tasks and display supportive team behaviors (Aubé and Rousseau, 2005). Given that goal commitment predicts individual grit (Tang *et al.*, 2019) and teams harmonize their individual and team goals (Duckworth and Gross, 2014; Southwick *et al.*, 2019), we hypothesize that:

*H3: Team goal commitment is positively associated with team grit.*

Based on the theorized dynamic interplay of team processes, thoughts, and emotions that produces team grit and promotes team innovation (Bernardy and Antoni, 2021), we also propose that team grit enables team innovation. There is evidence that passion supported by high-quality relationships drives team innovation (Wei *et al.*, 2023). In collective settings, social interactions (structural capital), shared goals (cognitive capital), and mutual trust (relational capital) bring about innovation (Gu *et al.*, 2013). Moreover, because literature suggests that the adaptability trait of team grit (Datu *et al.*, 2017) and shared mental models (Gevers *et al.*, 2015) are associated with innovation, we infer that team grit will enable team innovation. Thus, we hypothesize that:

*H4: Team grit is positively associated with team innovation.*

One of the significant positive outcomes of individual grit is work engagement (Duckworth *et al.*, 2007). Work engagement requires “vigor, dedication, and absorption” (Suzuki *et al.*, 2015, p. 2). Team work engagement is described as a “shared, positive, fulfilling, motivational emergent state of work-related wellbeing” (Costa *et al.*, 2014, p. 35). As the notions of dedication and vigor and a shared state of mutual well-being echo the perseverance and social dimensions of the proposed team grit construct, it appears that team grit and team work engagement are conceptually related. Several studies have also indicated that individual grit may lead to well-being (e.g., Disabato *et al.*, 2019), provided that individuals act prudently (Rego *et al.*, 2023). Accordingly, we propose that team grit, through elements of perseverance and connectedness, leads to team work engagement:

*H5: Team grit is positively associated with team work engagement.*

### **3. Research method**

#### ***3.1 Participants and procedure***

First, we used cross-sectional data to confirm the factor structure of the team grit scale. The first sample consisted of 228 UK-based respondents from a Cint response panel. Only respondents who met the criteria of having worked for more than three months in a given team and under high-pressure circumstances were included. The sample was predominantly represented by the information technology industry (19%), followed closely by the banking sector (18%) and engineering industry (10%). The rest of the sample represented more than eight further industries.

To test the hypotheses, the study obtained a second Cint sample of 269 United States respondents who had also worked for more than three months in a team and were operating under high-pressure circumstances. The biggest proportion of the sample was from the information technology industry (19%), followed by the education industry (17%). The rest



of the participants were spread across more than ten industries. Respondents' ages ranged between 18 and 65.

The study used individual perceptions as the unit of analysis, asking individuals to assess their teams. This is similar to other team-focused measures (e.g., Ma *et al.*, 2021; Sharma and Sharma, 2016). The work obtained ethical clearance from the University [redacted until publication] ethical clearance committee.

### **3.2 Measures**

To test the first hypothesis, we made use of scales of team grit and individual grit.

*Team grit.* The primary construct of the study was measured through the 8-item one-factor validated Team Grit Scale (see Appendix). The scale measures responses on a five-point Likert-type scale ranging from “strongly disagree” to “strongly agree”. Sample items include “Once we have set our goal, we keep our focus on it”, “As a team, we are able to be highly adaptive in order to achieve our goal” and “Our team members grow closer when we spend time together” ( $\alpha = .86$ ). The scale demonstrated configural, metric, partial scalar and residual invariance across geographies (Buchel, 2023)

*Individual grit.* We measured individual grit using Grit-S (Duckworth and Quinn, 2009) which consists of eight items which represent two factors: “consistency of interest” and “perseverance of effort”. Sample items of the two factors are “New ideas and projects sometimes distract me from previous ones” and “I am a hard worker”, respectively. Sometimes the scale loads on a single factor (Duckworth *et al.*, 2021).

To test the hypothesized antecedents of team grit, the following scales were used:

*Team psychological safety* was measured using the Edmondson (1999) seven-item scale ( $\alpha = .94$ ). A sample item is “Members of this team are able to bring up problems and tough issues.”

*Team goal commitment.* We operationalized team goal commitment through the Aubé and Rousseau (2005) three-item scale ( $\alpha = .85$ ). A sample item is “We really care about achieving the team’s goal.”

Finally, to test proposed outcomes of team grit, we included two scales:

*Team innovation* items ( $\alpha = .93$ ) came from Mitchell *et al.* (2022) and we asked the respondents to indicate the extent to which their teams are innovative. A sample is “To what extent does the team produce new ideas and introduce specific changes?”

The *team work engagement* scale of Costa *et al.* (2014) comprises nine items ( $\alpha = .86$ ) and measures the construct through items such as “During the task my team feels full of energy” and “My team feels very motivated to do a good job.”

### **3.3 Statistical analyses**

First, we confirmed the team grit scale’s factor structure in both samples. Then, to examine the discriminant nature of individual grit and team grit, we conducted confirmatory factor analysis with maximum likelihood estimates, using 2000 Bollen-Stine bootstrapped samples. We ruled out the presence of cross-loading items and made use of the heterotrait-monotrait (HTMT) criterion. After reviewing the descriptive statistics and Pearson correlations of the study variables, we assessed the adequacy of the measurement model. Three items of team psychological safety loaded poorly on the latent construct. We therefore compared two models with the second excluding team psychological safety. Thereafter, we made use of PLS-SEM path analyses in SPSS Amos to report on the standardized regression weights for the two models, indicating the observed relationships with a confidence level of 99% ( $p < .01$ ).

## **4. Results**

Table 1 reveals the confirmatory factor structures of the team and individual grit scales. We confirmed the team grit factor structure for the UK sample with excellent composite reliability ( $\omega = 0.892$ ) and convergent validity (AVE of 0.510). Moreover, the one-factor model fit the data well (CFI = 1.000, GFI = 0.981, AGFI = 0.961, RMSEA = 0.004, and SRMR = 0.022). For the USA sample, team grit attained a composite reliability of 0.897 ( $> 0.70$ ) but a lower AVE value (0.465). We however confirmed the one-factor structure in the data with excellent fit indices (CFI = 0.995, GFI = 0.983, AGFI = 0.958, RMSEA = 0.032, and SRMR = 0.024).

The individual grit scale and two dimensions displayed composite reliability ( $\omega = 0.617$ , factor 1;  $\omega = 0.442$ , factor 2;  $\omega = 0.580$ , scale) and a good AVE value (0.529). The two-factor model fit the data well (CFI = 0.988, GFI = 0.976, AGFI = 0.954, RMSEA = 0.041, and SRMR = 0.035).

Showing support for Hypothesis 1, the HTMT indices indicated that team grit was distinct from the individual grit “consistency of interest” (0.249) and “perseverance of effort” factors’ (0.631) subscales.

**Table 1.** Confirmatory factor structures and average variance extracted of team and individual grit

Items	Factor loadings ( $\lambda$ )				AVE (UK)	AVE (USA)	$\omega$ (UK)	$\omega$ (USA)
	TG (UK) <i>N</i> = 228	TG (USA) <i>N</i> = 269	IG-A	IG-B				
TG1	0.729	0.634			0.510	0.461	0.892	0.872
TG2	0.743	0.764						
TG3	0.791	0.699						
TG4	0.765	0.726						
TG5	0.765	0.798						
TG6	0.717	0.698						
TG7	0.608	0.621						
TG8	0.560	0.456						

IG1	0.786	(0.617)	(0.617)
IG2	0.812		
IG3	0.739		
IG4	0.804		
IG5	0.664	(0.441)	(0.442)
IG6	0.651		
IG7	0.776		
IG8	0.547	0.529	(0.580)

*Notes.* TG = team grit, IG = individual grit, AVE = average variance extracted.  $\omega$  = composite reliability. The values in brackets represent each of the factor values. *Source.*

Authors' own work

Table 2 shows that the team work engagement scale had excellent internal consistency for our sample ( $\alpha = 0.904$ ), with both team grit ( $\alpha = 0.868$ ) and team innovation ( $\alpha = 0.883$ ) displaying good internal consistency. However, we ascribed lower alpha values for individual grit ( $\alpha = 0.694$ ) and team psychological safety ( $\alpha = 0.648$ ) measures to potential error variances.

**Table 2.** Descriptive statistics including Pearson correlations of the scales

	Measure	Mean	Range	$\alpha$	1	2	3	4	5
1	Team grit	4.093	0.569	0.868					
2	Team psychological safety	3.639	1.074	0.648	0.403**				
3	Team goal commitment	40.456	0.119	0.845	0.675**	0.394**			
4	Team innovation	30.937	0.167	0.883	0.744**	0.367**	0.551**		
5	Team work engagement	30.990	0.836	0.904	0.691**	0.330**	0.559**	0.712**	
6	Individual grit	30.621	30.00	0.694	0.055	0.334**	0.173**	-0.021	-0.016

*Notes.*  $N = 269$ . \*\*  $p < 0.001$  level

*Source.* Authors' own work

The goodness-of-fit indices for the two path analyses models that respectively included and excluded psychological safety indicated a poorer fit when including team psychological safety in the model – for example, SMSR = 0.107, although other indices offered acceptable fit (CFI = 0.917; IFI = 0.918; TLI = 0.904; RMSEA = 0.060) based on Byrne (1994). A subsequent exclusion of the psychological safety construct achieved slightly better fit indices (e.g., SMSR = 0.060, RMSEA = 0.065), indicating a fair model fit (e.g., TLI = 0.919, IFI = 0.931, CFI = 0.931).

Table 3 presents the regression weights obtained. For model 1, the results indicated that an increase in team goal commitment ( $\beta = 0.608$   $CR = 8.626$ ,  $p < 0.001$ ) positively predicts an increase in team grit, supporting Hypotheses 2 and 3. Likewise, an increase in team grit is positively associated with an increase in team work engagement ( $\beta = 0.793$ ,  $CR = 9.938$ ,  $p < 0.001$ ) (Hypothesis 5) and team innovation ( $\beta = 0.844$ ,  $CR = 11.275$ ,  $p < 0.001$ ) (Hypothesis 4). While being cautious of the low Cronbach alpha values for the team psychological safety scale, positive correlations and regression weights between team psychological safety and team grit ( $\beta = 0.679$ ,  $CR = 7.997$ ,  $p < 0.001$ ) suggested support for Hypothesis 2.

The model 2 results confirmed statistically significant relationships between team grit and team goal commitment ( $\beta = 0.800$ ,  $CR = 11.388$ ,  $p < 0.001$ ), team work engagement ( $\beta = 0.811$ ,  $CR = 13.760$ ,  $p < 0.001$ ), and team innovation ( $\beta = 0.858$ ,  $CR = 11.594$ ,  $p < 0.001$ ) with higher beta and critical ratio values than for model 1.

**Table 3** Standardized regression weights for the relationships for model 1 (including team psychological safety) and model 2 (excluding team psychological safety)

Variables	Model 1			Model 2		
	$\beta$	<i>SE</i>	<i>CR</i>	$\beta$	<i>SE</i>	<i>CR</i>
Team psychological safety	0.679	0.075	7.997			
Team goal commitment	0.608	0.069	8.626	0.800	0.075	11.388
Team innovation	0.844	0.100	11.275	0.858	0.069	13.760
Team work engagement	0.793	0.097	9.938	0.811	0.100	11.594

*Note.* All values are significant at 1% level of significance

*Source.* Authors' own work

## 5. Discussion

The study gives empirical support for the nature of team grit and confirms theorized relationships with psychological safety, goal commitment, work engagement and innovation in teams. The concept of individual grit, known as the capacity to persevere in their efforts and remain consistently interested in achieving their goals (Duckworth *et al.*, 2007) has evolved over the last two decades – at least in a collectivist context – to include adaptability, leading to the question of how grit appears in teams.

Our findings expand the understanding of team grit. Team grit encapsulates elements of individual grit, including goal-focused perseverance (Duckworth *et al.*, 2007) and adaptability (Datu *et al.*, 2017). Extant conceptual propositions of grit at a collective level support these qualities (Bernardy and Antoni, 2021; Lee and Duckworth, 2018). Accordingly, gritty teams display unwavering pursuit of their goals and can adapt their strategies when they experience obstacles or stagnation, similar to gritty individuals (Duckworth and Gross, 2014; Jordan *et al.*, 2019).

Second, our research shows the value of measuring team grit as a distinct construct from individual grit because, at the team level, grit also encompasses a shared and connected identity. This results in the team growing closer together, celebrating each other's goal achievements, and the development of processes that manifest in shared and unique expressions. Therefore, team grit requires the emergence of team connectedness in the persistent pursuit of goals. This connected nature is similar to the measurement of team resilience, which incorporates other collective states, for instance social capital (Sharma and Sharma, 2016).

Third, the study positions team grit within a network of team constructs. We found that psychological safety (Edmondson, 1999) is positively associated with team grit. Consequently, in teams where members accept differences, uniqueness, and mistakes, helping



each other and not undermining each other, team grit may also emerge. Moreover, we found that goal commitment (Aubé and Rousseau, 2005) is positively associated with team grit. Thus, teams that care about and value their goals, and remain committed to the goals may also engender team grit. This is supported by propositions that gritty teams pursue mostly higher-order and lower-order goals that may be adapted in pursuit of their primary goal (Duckworth and Gross, 2014; Jordan *et al.*, 2019). Additionally, we found that team grit is positively associated with team innovation (Mitchell *et al.*, 2022) when team innovation reflects the degree to which the team brings about innovation, innovative ideas, and change. Furthermore, we found that team grit is positively associated with team work engagement. The measure of team work engagement used suggests that team grit may lead to team members feeling strong, enthusiastic, motivated, and happy when performing their tasks (Costa *et al.*, 2014).

## **6. Theoretical, empirical, and practical implications**

Theoretically, the study offers meaningful insights into the role of team grit in enhancing team effectiveness within the organizational context. Individual grit studies have focused mostly on the domains of academic achievement and healthcare, and only recently ventured into the significance of grit in the work environment (e.g., Southwick *et al.*, 2019; Suzuki *et al.*, 2015). Our study empirically shows that team grit can enable organizational effectiveness as previously theorized, but not measured (Bernardy and Antoni, 2021; Mathieu *et al.*, 2017).

The importance of teams having aligned goals to achieve performance has long been recognized (Lock and Latham, 1990). Our study contributes team goal literature by giving support to the notion that team grit is positively associated with innovation and work engagement in teams. Moreover, we have uncovered two mechanisms of support for team grit, namely team goal commitment and team psychological safety.

From a practical standpoint, hiring gritty individuals can only partially address the need for team grit. While grit often manifests in high-pressure environments (Schimschal *et al.*, 2021), the relationship between psychological safety and team grit shows that organizations should foster a safe culture to enable team grit, and ultimately team engagement and innovation. Organizational teams that work in high-pressure contexts are not limited to those working in technology, education, or retail. Many other teams, such as those in healthcare and emergency services, entrepreneurial ventures, or contexts of change require grit. The ability to optimize team performance rests on attaining joint goals (O'Neill and Salas, 2018). Team members and leaders can therefore support the development of grit by fostering psychological safety within the team. For example, they may promote a culture where team members feel safe to make mistakes, ask for help, and express diverse viewpoints. Additionally, leaders can create the right conditions for team grit to emerge by building team goal commitment. For instance, emphasizing the importance and value of the team's goals to the organization, the team, and the members themselves can encourage team grit development.

Our measure of team grit highlights the need to develop goal perseverance, diligence, coping and adaptive skills in teams. Additionally, organizations can strengthen team grit by fostering team cohesion, building a shared identity, and creating opportunities to celebrate shared achievements. Despite the urgency of projects, organizations should balance the need for clear and inspiring goals with opportunities to build adaptive skills, such as stress management, mindfulness, or similar practices. At the same time, work teams can enhance cohesion through shared expressions, open communication, and fostering a shared identity, for example, by involving all members in decision-making. Celebrating shared achievements may include visualizing shared success stories and providing joint public recognition.

Developing a shared leadership approach and team integration can further enable team effectiveness (Chamberlin *et al.*, 2024).

Given the results of this study, these practices can support the emergence of team grit, which, in turn, may lead to more innovative and engaged teams.

## **7. Limitations and research implications**

The article empirically demonstrates the nature and relevance of a parsimonious eight-item measure of team grit and the study provides scholars with significant opportunities to deepen their understanding of team behavior in pursuit of goals. However, further work is needed to explain how concepts like team passion or adaptability (Salas *et al.*, 2005) interact with team grit. A more in-depth study of the underlying mechanisms of team processes is warranted to uncover how these team processes engender team-level grit. These constructs may act as antecedents or outcomes of team grit.

Ting and Datu (2020) exposed several shortcomings in the individual grit scale, which can be translated into a research agenda for team grit as well. We still need a clearer understanding of the personal and interpersonal mechanisms that lead to the development of team grit and the positive work outcomes of team grit. As individual grit may also lead to negative outcomes (Arli *et al.*, 2020; Lucas *et al.*, 2015), future research should investigate the detrimental effects of team grit. The role of leadership and organizational culture in team grit formation should be part of a future research agenda. Further investigation could also measure the differential impact of team grit and other team goal-related constructs on team and organizational outcomes.

Moreover, research may compare the manifestation of grit in different types of teams and contexts (Ting and Datu, 2020). Team grit can offer a useful way to study the effectiveness of teams that operate in extreme conditions, which is a growing area of interest (Schmutz *et al.*, 2023). Although we used an American panel sample to test hypothesized

relationships, different cultural contexts may yield different results (Abu Hasan *et al.*, 2022).

Team grit may also manifest in diverse ways based on different boundary conditions.

Finally, there is a need for a systemic review of the interrelationships between organizational-level, team-level, and individual-level grit constructs, as well as the antecedents and outcomes of these processes. Leadership and culture are important considerations in organizational outcomes that will hold implications for team grit as well. We recommend a configurational research approach to understanding the combinations of goal-related constructs that bring about positive organizational outcomes. Furthermore, this study was based on a cross-sectional design. Given the temporal nature of collective constructs (Mathieu *et al.*, 2022) and the “arbitrary rhythms” of team processes that lead to performance (Marks *et al.*, 2001), the dynamic evolution of team grit should be studied in a longitudinal design.

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