Original Manuscript

Organizational Psychology Review

Organizational Psychology Review
1–58

DOI: 10.1177/20413866211041157
journals.sagepub.com/home/opr

SAGE

The team cohesion-performance relationship: A meta-analysis exploring measurement approaches and the changing team landscape

Rebecca Grossman
Hofstra University, USA

Kevin Nolan
Hofstra University, USA

Zachary Rosch
Hofstra University, USA

David Mazer
Hofstra University, USA

Eduardo Salas
Rice University, USA

Abstract

Team cohesion is an important antecedent of team performance, but our understanding of this relationship is mired by inconsistencies in how cohesion has been conceptualized and measured. The nature of teams is also changing, and the effect of this change is unclear. By meta-analyzing the cohesion-performance relationship ($k = 195$, $n = 12{,}023$), examining measurement moderators, and distinguishing modern and traditional team characteristics, we uncovered various insights. First, the cohesion-performance relationship varies based on degree of proximity. More proximal measures –task cohesion, referent-shift, and behaviorally-focused– show stronger relationships compared to social cohesion, direct consensus, and attitudinally-focused, which are more distal. Differences are more pronounced when performance metrics are also distal. Second, group pride is more predictive than expected. Third, the cohesion-performance relationship and predictive

Paper received 28 June 2020. Received revised July 30, 2021

Corresponding author:
Rebecca Grossman, Hofstra University, 114 Hauser Hall, 135 Hofstra University, Hempstead, NY 11549, USA.
Email: rebecca.grossman@hofstra.edu

capacity of different measures are changing in modern contexts, but findings pertaining to optimal measurement approaches largely generalized. Lastly, important nuances across modern characteristics warrant attention in research and practice.

Plain Language Summary

Team cohesion is an important antecedent of team performance, but our understanding of this relationship is mired by inconsistencies in how cohesion has been conceptualized and measured. The nature of teams has also changed over time, and the effect of this change is unclear. By meta-analyzing the cohesion-performance relationship ($k = 195$, $n = 12{,}023$), examining measurement moderators, and distinguishing between modern and traditional team characteristics, we uncovered various insights for both research and practice. First, the cohesion-performance relationship varies based on degree of proximity. Measures that are more proximal to what a team does – those assessing task cohesion, utilizing referent shift items, and capturing behavioral manifestations of cohesion – show stronger relationships with performance compared to those assessing social cohesion, utilizing direct consensus items, and capturing attitudinal manifestations of cohesion, which are more distal. These differences are more pronounced when performance metrics are also more distal. Second, despite being understudied, the group pride-performance relationship was stronger than expected. Third, modern team characteristics are changing both the overall cohesion-performance relationship and the predictive capacity of different measurement approaches, but findings pertaining to the most optimal measurement approaches largely generalized in that these approaches were less susceptible to the influence of modern characteristics. However, in some contexts, distal cohesion metrics are just as predictive as their more proximal counterparts. Lastly, there are important nuances across different characteristics of modern teams that warrant additional research attention and should be considered in practice. Overall, findings greatly advance science and practice pertaining to the team cohesion-performance relationship.

Keywords

cohesion, group dynamics, measurement, meta-analysis, modern teams, teams

Teams are a topic of great interest to both researchers and practitioners given the rise of team-based work in modern organizations (Kozlowki & Ilgen, 2006). One aspect of team functioning that has emerged as particularly important is team cohesion—a shared attraction, bonding, or sense of pride among team members that is driven by social- or task-based elements associated with team membership (Casey-Campbell & Martens, 2009). A positive relationship between team cohesion and team performance has been demonstrated across a number of meta-analyses, with the link largely persisting even when various contextual features are taken into account (Beal et al., 2003; Carron et al., 2002; Castaño et al., 2013; Chiocchio & Essiembre, 2009; Evans & Dion, 1991; Gully et al., 1995; Mullen & Copper, 1994).

Despite widespread agreement about its importance, the conceptualization and measurement of cohesion has long been remarkably inconsistent (Casey-Campbell & Martens, 2009). A recent review of cohesion research identified a myriad of ways in which the construct has been conceptualized that vary in terms of dimensionality, level of focus, and even basic definition. Further, more than 35 unique measures of cohesion were found to exist in published research (Salas et al., 2015). This lack of consistency has been recognized as problematic for over 30 years (Mudrack, 1989). Nevertheless, it continues to persist, and what remains unclear is how these

varying approaches affect our understanding of the cohesion-performance relationship. Although differences in the relationships observed across studies may be attributable to the unique aspects of team contexts being investigated, they might also be attributable to differences in how cohesion was operationalized. This inconsistency hinders scientific advancement by limiting our ability to compare and replicate research findings, in turn lessening our capacity to diagnose, monitor, and facilitate cohesion in organizational settings. With both scientists and practitioners calling for innovative new ways to measure team constructs (e.g., Mathieu et al., 2017), an important step in this direction is to first understand how key features of current operationalizations influence the relationships observed between team cohesion and team performance. Therefore, we conducted a meta-analysis to explore this issue.

The meta-analysis conducted by Beal et al. (2003) advanced our understanding of the criterion space in the cohesion-performance relationship by demonstrating that stronger correlations exist between these variables when, "performance was defined as a behavior (as opposed to outcome), when it was assessed with efficiency measures (as opposed to effectiveness measures), and as patterns of team workflow become intensive . . . " (p.989). Furthermore, the three main components of cohesion (i.e., task commitment, interpersonal attraction, and group pride) were shown to independently relate to the various performance domains. Building upon their work, the aim of this meta-analysis is to contribute to our understanding of the predictor space of the cohesion-performance relationship by examining how common differences in the ways cohesion has been operationalized moderate the relations reported in research and why. The set of common differences examined in this study come from qualitative reviews of the various approaches that have been used to measure cohesion (Grossman et al., 2015; Salas et al., 2015). Expanding upon this work, our research offers a systematic quantitative investigation of how these differences affect the relationship between team cohesion and team performance from which rigorous conclusions can be drawn. In this way, we use meta-analysis as a knowledge-synthesis vehicle for adjudication; clarifying and strengthening the foundation of what is known about the cohesion-performance relationship (Cronin & George, 2020).

Additionally, to thoroughly understand the cohesion-performance relationship, it is important to consider that the nature of teamwork has changed significantly in recent years, which is a major factor motivating practitioners and scholars to call for new and innovative ways to measure team constructs (e.g., Mathieu et al., 2017). Whereas teaming once involved stable, supervised, and in-person interactions, today's teams are often characterized by dynamic composition, increasing autonomy, and technology-mediated communication (Tannenbaum et al., 2012). Furthermore, macro trends in digitalization, globalization, and social inclinations are creating modern teams that differ from their predecessors in both structure and function (Wageman et al., 2012). These changes may have implications not only for team dynamics, but also for how cohesion should best be conceptualized and measured (Mathieu et al., 2017). Therefore, to provide a broader understanding of the boundary assumptions and constraints of the cohesion-performance relationship, this study also examines the potential moderating effects of modern team characteristics (e.g., virtuality, shared leadership, team tenure), including how they interact with the various measurement features being investigated. In this way, we use meta-analysis as a knowledge-synthesis vehicle for redirection; offering potential fruitful new avenues of exploration in the assessment of team cohesion and its relationship with performance (Cronin & George, 2020).

Overall, this research advances the literature by uncovering the roles of measurement practices and the changing team landscape in shaping the relationship between team cohesion and team performance. We clarify best practices for

measuring team cohesion by providing these insights, and importantly, offer theoretical explanations for why they are best practices, providing a rich foundation for additional research and practice.

Theoretical background

Cohesion conceptualization and measurement

Measurement serves as the basic foundation for all empirically-driven knowledge in the organizational sciences and other fields focused on psychological constructs. Because latent constructs cannot be directly observed, our understanding of phenomena is dependent on how well we operationalize and measure them (Schultz & Whitney, 2005). Thus, measurement plays a critical role in conclusions that are drawn from research, as well as decisions that are made in practice (Guion, 2011; Kazdin, 2003). Past conclusions about the cohesion-performance relationship become particularly worrisome when we consider the vast range of approaches that have been used to measure cohesion. Many reflect not specific, validated measures that are used in consistent manners across studies, but rather an amalgamation of distinct features built into "home grown" metrics that often differ from study to study. This not only presents challenges for both researchers and practitioners seeking to evaluate cohesion, but also calls into question the extent to which the cohesion-performance relationship is influenced by various measurement artifacts. Thus, we highlight several features that distinguish different cohesion measurement approaches, as identified in recent qualitative reviews (Grossman et al., 2015; Salas et al., 2015), and examine the extent to which they moderate the relationship between cohesion and performance.

Cohesion dimensions. Cohesion is one of the earliest, most widely studied team constructs, with interest in it spanning multiple disciplines and settings (Carron & Brawley, 2000). With this widespread interest has come great variety in how cohesion has been conceptualized and measured. For example, early scholars adopted unidimensional approaches (e.g., team members' *attraction* or *resistance to leaving*), while subsequent definitions became broader and inclusive of multiple dimensions (e.g., *resultant of all forces acting on members to remain in the group*; Dion, 2000). More recently, multidimensional approaches have become more specific, often comprising *social cohesion* (e.g., shared liking or attachment), *task cohesion* (e.g., shared commitment to task), and to a lesser extent, *group pride* (e.g., shared importance of being a team member; Beal et al., 2003).[1] Currently, scholars tend to focus on a specific dimension, or on different combinations of dimensions, and draw from a vast range of measures to capture such dimensions, as there is no standard, agreed upon approach for conceptualizing and measuring cohesion in the extant literature (Salas et al., 2015).

To identify optimal measurement approaches, it is important to consider the role of each cohesion dimension. Research generally indicates cohesion is a multidimensional construct with unidimensional facets that have their own unique influences. Whereas early meta-analyses found that only task cohesion was consistently related to performance (Mullen & Copper, 1994), later work suggests each of the three principle dimensions have significant relationships of their own (Beal et al., 2003). Though recent studies haven't found differences in the magnitude of cohesion-performance relationship across dimensions, they do suggest that task cohesion may be influential across a broader set of situational criteria. For example, social cohesion has emerged as more important for behavioral-based outcomes, but task cohesion consistently relates to both behavioral- and outcomes-based performance metrics (Beal et al., 2003; Chiocchio & Essiembre, 2009). Consistent with this finding and the theoretical interpretations of each dimension, we expect that

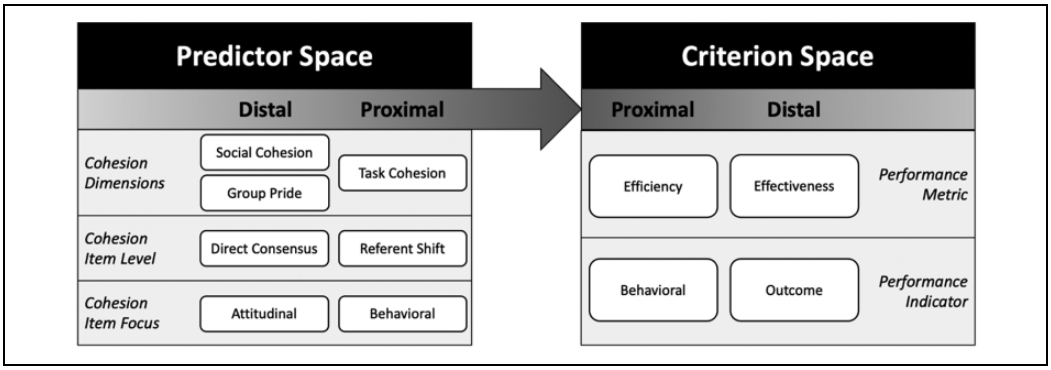

Figure 1. Theoretical proximity between cohesion and performance measures. *Note*. The physical distance between boxes reflects the theoretical distance between constructs (e.g., task cohesion is more proximal to efficiency than to effectiveness).

measures of task cohesion will have the strongest relationship with performance in this meta-analysis. Task cohesion reflects a shared investment in achieving the team's objectives, which is inherently more performance oriented than the other dimensions, given that social cohesion is driven by socio-emotional elements, and group pride is derived from either task- or social-aspects of team functioning. Accordingly, task cohesion is more likely to elicit performance-oriented interactions whereas those triggered by other cohesion dimensions may or may not be performance-relevant.

Additionally, we argue that task cohesion is more proximal to team performance than are social cohesion and group pride. Specifically, we build on prior work (Beal et al., 2003) to theorize about how the theoretical distance between cohesion and performance may render different cohesion measurement approaches more or less predictive (see Figure 1 for a visual depiction of this theory). Beal and colleagues (2003) found that the cohesion-relationship was stronger when performance was operationalized as efficiency versus effectiveness, and as behaviors versus outcomes, and theorized that these stronger relationships were observed because behaviors and efficiency are more closely related, or more proximal to what a team does, while outcomes and effectiveness can also be influenced by external factors and are less sensitive to capturing the team's inputs.

Whereas they focused on different types of performance criteria, we build on this line of thinking to suggest that different types of cohesion measurement can also produce variance in the distance between cohesion and performance. This aligns with argument above, that task cohesion will show stronger relationships with performance because it is inherently more performance-oriented. Further, we consider task cohesion more proximal to performance because it reflects team members' commitment to the task and is therefore directly related to taskwork, while social cohesion and group pride likely impact performance through more distal mechanisms, such as by reducing interpersonal conflict or increasing motivation. Measures of task cohesion are therefore hypothesized to account for more variance in the prediction and explanation of team performance of all types than are other cohesion dimensions.

> **Hypothesis 1:** measures capturing task cohesion demonstrate stronger relationships with performance compared to those capturing social cohesion or group pride

Despite our expectation that measures capturing task cohesion will relate to performance most strongly, we also expect those assessing

multiple cohesion dimensions will demonstrate stronger relationships with performance than those assessing a single dimension. Past meta-analyses have shown that task cohesion, social cohesion, and group pride each uniquely relate to performance (Beal et al., 2003; Castano et al., 2013), suggesting that multidimensional measures are likely to be more predictive than any unidimensional measure alone. Further, because they capture more of the cohesion construct space, they arguably will account for more variance in performance. Our rationale builds on existing theory which purports that relationships between variables are strongest when they are matched on key characteristics. For example, according to the compatibility principle, attitudes and behaviors can be expected to relate to one another only when they are compatible in action, target, context, and time (Ajzen & Fishbein, 1977). Supporting this theory, a meta-analysis suggests job attitudes are more predictive of behaviors when general attitudes are linked to comparably general behaviors rather than more specific criteria (Harrison et al., 2006). Similarly, research on personnel selection suggests that predictive validity is optimized when the bandwidth of predictor measures (e.g., personality traits) is commensurate with the bandwidth of criteria measures (e.g., job performance; Barrick & Mount, 2005). Linking these ideas back to teams research, team performance is generally a broad construct that can encompass any number of behaviors and outcomes (Beal et al., 2003). Performance criteria vary depending on the team or task type in question, and can be derived though social-, motivational-, and task-based elements. Consistent with the bandwidth of performance measures, cohesion measures that are similarly broad (i.e., multidimensional) are expected to afford greater predictive and explanatory potential.

Hypothesis 2: multidimensional measures of cohesion demonstrate stronger relationships with performance compared to unidimensional measures (i.e., task, social, group pride alone)

Item level. Though generally a team-focused construct, cohesion can be operationalized at both the individual- and the team-levels. Consistent with the direct consensus and referent-shift models (Chan, 1998), items may prompt respondents to report on their own cohesion (direct consensus, e.g. *some of my best friends are on the team*) or their perceptions of cohesion within the team (referent-shift, e.g. *our team is united in trying to reach its goals for performance*). In both approaches, individual responses are aggregated to the team-level if appropriate within-group agreement is attained, to reflect the shared team property. Although the direct consensus model is widely used, it has also been criticized, since individuals' perceptions of their own cohesion may not accurately capture the collective sense of cohesion that has emerged in the team (Kirkman et al., 2001). The referent-shift model is therefore considered more consistent with calls for measurement that truly reflects the level of interest, and has been associated with stronger within-group agreement and between-group variability (Klein et al., 2001), suggesting it is effective for tapping into shared team characteristics.

Cohesion is generally conceptualized as a team-level construct, and because referent-shift measures more closely align with this conceptualization than direct consensus measures, we expect them to have greater construct validity. In providing more accurate assessments of the levels of cohesion among team members, referent shift measures are also expected to demonstrate stronger relationships with measures of team performance. Further, we consider measures utilizing the referent shift approach to be more proximal to performance than those utilizing direct consensus because they more directly capture cohesion as an emergent property at the team level, which is more closely connected to how the team performs, whereas the direct consensus approach

captures individuals' perspectives, which are a step removed from the team's interactions. We acknowledge that some perspectives incorporate an individual component into cohesion conceptualizations (e.g., *individual attraction to the group*, Carron et al., 1985), but argue that team-focused aspects are more relevant to team performance, making them more appropriate to measure when the team is the focus. Therefore, referent-shift measures are hypothesized to account for more variance in the prediction and explanation of performance than direct consensus measures.

Hypothesis 3: measures utilizing referent shift demonstrate stronger relationships with performance compared to those utilizing direct consensus

Item focus. Like other team constructs (e.g., trust; Costa & Anderson, 2011), cohesion can manifest as either attitudes toward the team or behavioral interactions that can be considered indicative of such attitudes. Reflecting this, cohesion measures often include items prompting respondents to report on their own attitudes, or perceptions of their team members' attitudes, about the team (attitudinally-focused items; e.g. *members of our team are proud to be a part of the team*) as well as items assessing cohesion-relevant behaviors (behaviorally-focused items; e.g. *our team spends time together outside of work*; Salas et al., 2015). Within team contexts, behavioral manifestations may be a primary mechanism through which members' attitudes are expressed to one another, enabling constructs to emerge at the team-level. Attitudes are thought to incite a force that prompts individuals to engage in certain behaviors as a means of expressing or manifesting those attitudes (Harrison et al., 2006). As has long been understood through the theory of planned behavior (Ajzen, 1991), however, attitudes do not always prompt individuals to engage in corresponding behaviors. Attitudes alone are therefore not sufficient for understanding the emergence of team cohesion. Along these lines, Carter and colleagues (2015) discussed the importance of observability for team members to be able to perceive, and in turn for researchers to be able to accurately assess emergent team phenomena. Behaviorally-focused measures of cohesion can be considered more proximal to performance than attitudinally-focused measures, which are more distal indicators that may or may not translate to behaviors.

Thus, we expect that behavioral measures will provide the most direct and accurate assessment of the cohesion emerging among team members and that perceptions of this emergence will have the greatest influence on performance. Therefore, behaviorally-focused measures of cohesion are hypothesized to account for more variance in the prediction and explanation of team performance than attitudinally-focused measures.

Hypothesis 4: cohesion measures capturing behaviors demonstrate stronger relationships with performance compared to those capturing attitudes

Alignment with performance measures. Beyond features of cohesion measures, features of performance measures may also influence the strength of the cohesion-performance relationship, particularly depending on the degree to which they align with one another. As noted, Beal and colleagues (2003) found differences in the cohesion-performance relationship depending on how proximal performance metrics were to what the team does. Connecting these ideas with the notion that the performance indicators efficiency and behaviors can be considered more proximal to cohesion, whereas effectiveness and outcomes can be considered more distal (Beal et al., 2003), we theorize that cohesion and performance vary in how proximal or distal they are to one another depending on how each one is operationalized. As such, we expect that when cohesion is connected to outcomes that are more distal in nature (i.e., effectiveness, outcomes), it will be particularly important to measure cohesion in a manner that is more proximal (i.e., task

cohesion, behaviorally-focused, referent shift), as a means of reducing the gap and strengthening the cohesion-performance relationship. Conversely, we expect differences between proximal and distal (i.e., social cohesion and group pride, attitudinally-focused, direct consensus) cohesion metrics to be less pronounced when cohesion is connected to more proximal (i.e., efficiency, behaviors) measures of performance. Specifically, we hypothesize:

Hypothesis 5: When cohesion is linked to performance as effectiveness, the cohesion-performance relationship is stronger when cohesion is operationalized as (a) task cohesion compared to social cohesion and group pride, (b) behaviors compared to attitudes, and (c) referent shift compared to direct consensus, whereas these differences are less pronounced when cohesion is linked to performance as efficiency

Hypothesis 6: When cohesion is linked to performance as outcomes, the cohesion-performance relationship is stronger when cohesion is operationalized as (a) task cohesion compared to social cohesion and group pride, (b) behaviors compared to attitudes, and (c) referent shift compared to direct consensus, whereas these differences are less pronounced when cohesion is linked to performance as behaviors

Cohesion in traditional versus modern teams

In recent years, scholars have increasingly recognized the changing nature of teams. For example, in 2012, Tannenbaum and colleagues identified three primary changes affecting teams—dynamic composition, technology and distance, and empowering and delayering. Broadly, these themes reflect key differences between traditional and modern teams. Traditionally, teams have had clearly defined, stable membership, have primarily interacted face-to-face, and have had a clear team leader. Conversely, more modern teams are characterized by fluid reconfiguring and multiteam membership, are more likely to communicate using technology from dispersed locations, and are increasingly empowered to make decisions and engage in self-management. Around the same time, Wageman et al. (2012) discussed societal macro trends that are changing the way teams function. They identified digitalization, globalization, value pluralism, and climate change as major factors that are changing teamwork by altering opportunities for, the need for, and the structure of collaboration in the modern day. More recently, Benishek and Lazzara (2019) described a "new era" of teams and explained how various team characteristics are changing in the present landscape, including: membership, interdependence, shared goals, team dynamics, and team boundaries.

Considering these changes can fundamentally alter the way teams function, they may have implications for cohesion and its relationship with team performance. Specifically, it is conceivable that cohesion may emerge, manifest, and relate to performance differently in today's teams compared to those with more traditional features. In turn, such differences may have implications for approaches to conceptualizing and measuring cohesion in modern teams, and for using empirical research conducted on traditional teams as benchmarks for modern studies.

Cohesion dimensions. In the modern landscape, individuals are likely to be members of multiple teams, to be with any one team for shorter periods of time, and to spend less time together face-to-face (Tannenbaum et al., 2012). Further, team tasks and goals are becoming increasingly fast-paced and complex. In response to these changes, teams will arguably develop a greater emphasis on task-based elements of the team, with less focus on social elements. This may change the way cohesion dimensions develop and relate to performance. Because time and opportunity for social cohesion to develop is limited in modern contexts, social bonding may

become a less salient aspect of the team experience. For example, prior research suggests social cohesion takes longer to emerge than task cohesion (Siebold, 2006) and that social bonding can be hindered in virtual environments (e.g., Hambley et al., 2007) due to reduced availability of rich and spontaneous communication (Daft & Lengel, 1986). Therefore, there may be fewer opportunities for social cohesion to emerge and contribute to performance in modern teams.

Conversely, task cohesion may become a key mechanism through which teams can come together and achieve their objectives despite the challenges associated with modern teams. While social aspects can suffer, research has shown that task-related constructs (e.g., transactive memory) can develop and predict performance under conditions such as virtual communication, global dispersion, multiple team membership, and new team configuration (Maynard et al., 2012). If team members are equally committed to the team's tasks, they may be more likely to expend the time and effort needed to perform in this setting. Further, because team members will likely be juggling multiple tasks and team memberships, it may become particularly important for them to be committed to a team's tasks in order for them to devote the necessary resources to the goals of that team. In their discussion of contemporary teams, Wageman et al. (2012) describe the concept of value pluralism—when people are focused on shaping their own lives and careers in a search for personal meaning and autonomy rather than defaulting to traditional paths. With this perspective increasing in modern teams, the presence of task cohesion, which indicates that members personally value, and are committed to the team's tasks, may become an especially critical factor for facilitating team performance.

Related to these ideas is the distinction between structural and behavioral interdependence. Whereas structural interdependence reflects the degree to which a team's task requires members to collaborate and exchange resources, behavioral interdependence captures the extent to which they actually work together. Wageman et al. (2012) explored how the changing ecology of modern teams may be producing increases in structural interdependence, while concurrently decreasing behavioral interdependence. In other words, modern teams are more likely to have tasks that require collaboration, yet less likely to spend time simultaneously working together. This aligns with our expectations that in modern teams, greater focus will be placed on the task, with less opportunity for social relationships.

Similar patterns might emerge for group pride. That is, group pride emerges when team members identify with the status and ideologies associated with the team and perceive team membership as personally important. Considering the increase in value pluralism described above, group pride may serve as a key driver of individuals' efforts to promote team performance despite their increased demands and less socially rich team experiences. Likewise, group pride may be able to emerge more "swiftly" than social cohesion and may motivate the expenditure of resources needed for task accomplishment, even though modern teams may experience reduced behavioral interdependence, making it particularly important for promoting performance in these settings. Considering these ideas in combination, we propose the following:

> **Hypothesis 7:** there is a three-way interaction such that the (a) the task cohesion-performance relationship is stronger, (b) the social-cohesion performance relationship is weaker, and (c) the group-pride performance relationship is stronger when teams are more modern compared to more traditional

Item level. The changes taking place in modern teams may also have implications for the level at which cohesion exists and relates to performance. As noted, scholars have emphasized the importance of observability for the emergence of constructs at the team level (Carter et al., 2015). That is, sufficient time and team interaction is

necessary before cohesion, for example, can be perceived by team members and can coalesce as a shared team property. Relating this concept to the primary features of modern teams, it is possible that team-level cohesion may be hindered or at least more challenging to attain. Shorter lifespans, less face-to-face interaction, and the division of time across multiple teams, for instance, may reduce opportunities that contribute to cohesion emergence. In such situations, individual-level perceptions of cohesion may become more important predictors of performance than they are in more traditional teams, where sustained and shared team experiences are more likely. Essentially, with team-level cohesion potentially hindered, individual members' perceptions of cohesion may become drivers of processes that contribute to performance rather than solely the team as a whole's perceptions.

Related to this idea, Feitosa et al. (2020) recently found that referent shift measures of team trust yielded weaker relationships with performance in ad hoc teams compared to mixed-referent measures in intact teams. They suggested the individual perspective is more relevant when sufficient time has not elapsed for team trust to emerge, while both individual and team perspectives become important as more time is spent together as a team. Further exemplifying the role of the individual-level in modern contexts, Wildman and colleagues (2012) developed a model of trust in swift starting action teams which included individual-level trust in the team as a predictor of processes and performance at the team level.

Although we expect the individual-level perspective will become more relevant in modern teams, we do not also expect the importance of the team-level will be diminished. Specifically, our focus of comparison is between modern versus traditional teams, not between referent shift and direct consensus in this instance. Whereas we expect referent shift items to be more predictive in modern teams, we also expect direct consensus items to remain equally predictive if teams are able to develop cohesion as a shared emergent state in the modern context. Prior research suggests emergent constructs can indeed develop under conditions characteristic of modern teams. For example, Crisp and Jarvenpaa (2013) showed that "swift trust" emerged in teams that were ad hoc, entirely virtual, and globally dispersed. While cohesion in modern contexts has not yet been researched extensively, it has indeed demonstrated relationships with performance in relevant settings such as ad hoc teams and virtual teams (e.g., van der Land et al., 2015), and the concept of "swift cohesion" has been previously discussed (Coultas et al., 2014). We expect cohesion will remain an important predictor of performance in modern teams by facilitating engagement and processes that contribute to performance—the same mechanisms through which it plays a role in traditional teams. Further, if team members are able to get on the same page about the task, form social relationships, and develop a shared sense of pride, these cohesive bonds may even become an avenue through which teams can overcome some of the modern day challenges, enabling them to achieve performance objectives. Thus, we expect both individual and team perspectives will be relevant to performance in modern teams. Because we do not expect a difference across settings for referent shift items (i.e., null hypothesis), we do not put forth a specific hypothesis.

> **Hypothesis 8:** there is a three-way interaction such that when direct consensus items are used, the cohesion-performance relationship is stronger when teams are more modern compared to more traditional

Item focus. Finally, we believe the ecology of modern teams will also have implications for cohesion's manifestation as attitudes or behaviors, and its relationship with performance. Earlier, we argued behavioral, compared to attitudinal indicators of cohesion would be stronger performance predictors based on the theory of planned behavior (Azjen, 1991) and

the importance of observability for emergence (Carter et al., 2015). We propose this logic extends to, and is perhaps even further pronounced, within modern terms. When team membership is fluid, teams exist for shorter periods of time, team members spend less time interacting face-to-face, etc. there will be less time and fewer opportunities for members' attitudes to be translated into behaviors and experienced by other members than there are in more traditional settings. Instead, what team members *do*, or their behavioral manifestations of cohesion that occur within their limited, and often technology-mediated time together, will become the primary mechanisms through which cohesion influences performance. Thus, we hypothesize:

> **Hypothesis 9:** there is a three-way interaction such that when (a) behaviorally-focused items are used, the cohesion-performance relationship is stronger, and (b) when attitudinally-focused items are used, the cohesion-performance relationship is weaker when teams are more modern compared to more traditional

Methods

Literature search

Consistent with previous meta-analyses, searches were conducted within the databases PsycINFO and Dissertation Abstracts International for combinations of the following keywords within article abstracts: *cohesion*, *cohesiveness*, *group*, *team*, *interpersonal attraction*, *group attraction*, *task commitment*, *task attraction*, *group integration*, *social integration*, *group pride*, *cooperation*, and *resistance to disruption*. Prior cohesion meta-analyses were also back-referenced to ensure studies included in prior work were represented in our pool of articles.

Inclusion criteria

Searches yielded 6,742 articles. After removing studies not meeting our criteria (see Figure 2) through an initial review, 789 articles remained. To be retained, studies needed to measure both cohesion and performance, and to include a correlation (or other statistic that could be converted to a correlation) reflecting the relationship between them. Because individual- and team-level studies should not be combined in meta-analyses (Beal et al., 2003), and our focus is on team cohesion, we only included studies that analyzed the team level. Although we used a wide range of search terms, our goal was to identify studies that may have included cohesion as a secondary variable, not necessarily to include each of these constructs (e.g., cooperation), as indicators of cohesion. Studies were only included if constructs closely aligned with existing definitions of cohesion; in all but a few instances, studies used the construct name "cohesion" or some variant in their measures and methods sections. Although some team effectiveness models include team viability and satisfaction with the team (Hackman, 1987), we chose to focus on team performance. Because our purpose is to examine the role of measurement features, it is important to do so using a relationship that is sufficiently established. Likewise, our secondary goal of exploring modern versus traditional teams also requires a foundational link that can serve as a baseline. Thus, considering that the cohesion-performance relationship has been established through at least seven prior meta-analyses, whereas none exist connecting cohesion to viability or satisfaction, we excluded studies that did not assess performance specifically. More information about construct names and excluded effectiveness criteria is provided in Figure 2.

Coding procedures

Studies were coded for several pieces of information, including measurement features, sample size, reliability coefficients, and effect sizes. The first four authors of this study first coded and discussed 50 articles together to attain a shared

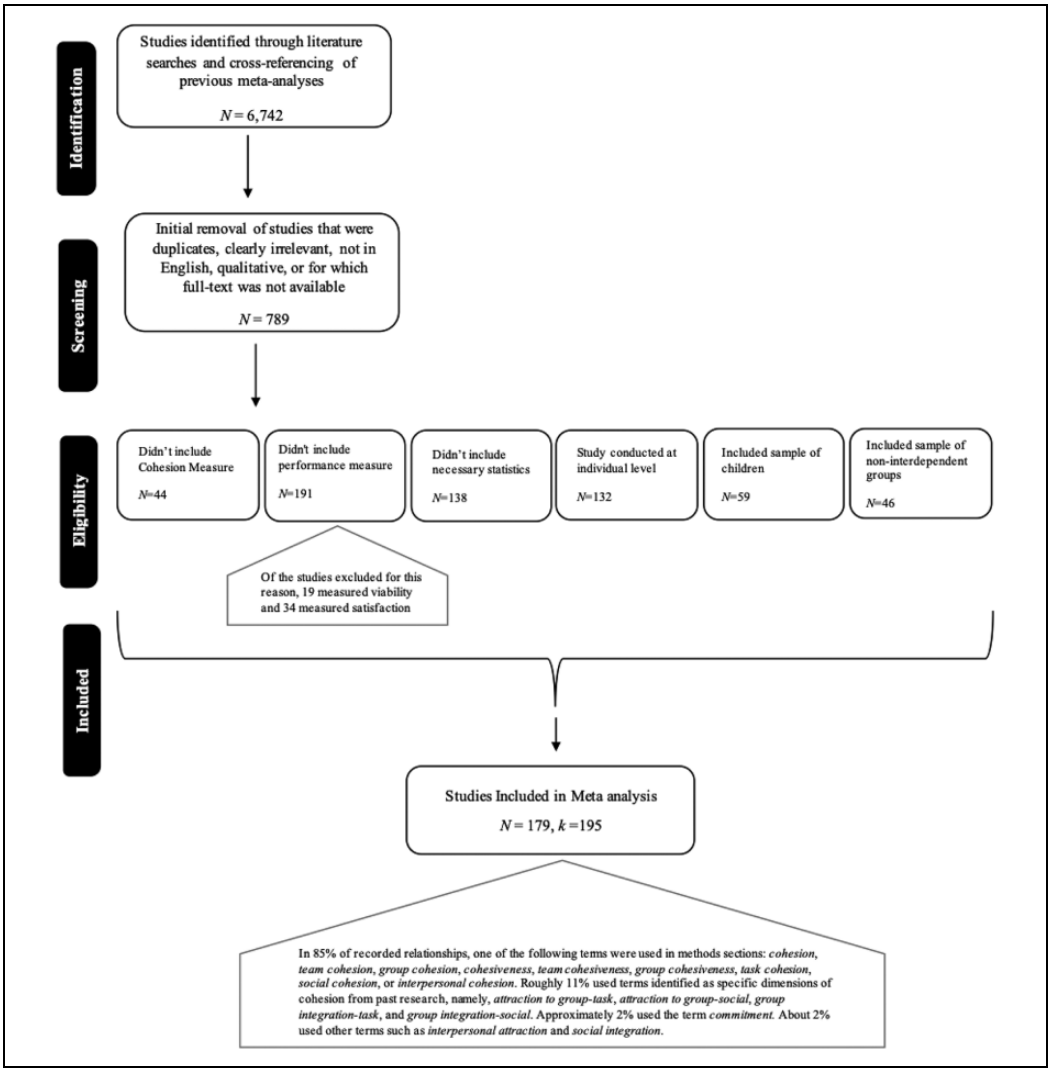

Figure 2. Inclusion and exclusion criteria.

mental model of coding procedures. Coders made decisions based on the definitions and examples described in the coding scheme below. Remaining articles were then distributed such that each article was coded by two people. Initial inter-rater agreement was 94%; any discrepancies were resolved through discussion until 100% agreement was attained. A summary of all coding is available in the Appendix.

Description of coding scheme

Below is a brief description of coding categories and any decision rules that accompanied them. Measures not fitting neatly into these categories, but that we considered *primarily* (i.e., 75% or more) one or the other, were coded as such. A scale that included nine items capturing social cohesion and one item capturing task cohesion, for example, was coded as social.

Those demonstrating a greater combination of different types of items were coded as *mixed*.

Cohesion dimensions. Consistent with existing meta-analyses (Beal et al., 2003; Mullen & Copper, 1994), we coded measures as social cohesion, task cohesion, or group pride. Measures reflecting preference, bonding, and liking among team members were coded as social cohesion on the basis of the definition, "*a shared liking for or attachment to the members of the group*" (Beal et al., 2003, p. 995). Measures capturing task commitment and task utility were coded as task cohesion, based on the conceptualization, the "*extent to which the task allows the group to attain important goals or the extent to which a shared commitment to the group's task exists*" (Beal et al., 2003, p. 995). In line with the definition of group pride as, "*the extent to which group members exhibit liking for the status or ideologies that the group supports or represents, or the shared importance of being a member of the group*" (Beal et al., 2003, p. 995), measures assessing this shared importance or devotion to the team, and feelings of morale and team spirit were coded as group pride. Measures not reflecting one of these definitions and/or representing more generic assessments of cohesion were coded into the overall, composite category. Such measures were considered *multidimensional*, along with instances where different dimensions measured within a single independent sample were combined to evaluate the overall cohesion-performance relationship. Measures that captured general cohesion overall (e.g., *how cohesive is your group in relation to other groups*?), were coded into a *generic* category.

Item level. Cohesion items were coded based on whether they captured the individual or the team level. Items evaluating team members' individual cohesion experiences (e.g., *I get along with members of my team*) were coded as direct consensus; those measuring perceptions of the team's cohesion as a whole (e.g., *my team members get along*), were coded as referent shift.

Item focus. Measures were also coded based on whether they focused on attitudinal or behavioral manifestations of cohesion. Those primarily assessing attitudes (e.g., *I am happy to be a part of this team*) were coded as attitudes-focused, while metrics capturing primarily behaviors (e.g., *team members work together as a team*) were categorized as behaviors-focused.

Team performance. Outcomes capturing performance, completion, quality, and productivity in relation to team tasks (DeChurch & Mesmer-Magnus, 2010) were included. Distinctions were made between performance as *behaviors* (i.e., evaluation of actions or behaviors relevant to the team's goals and in members' control; e.g. ratings of specific work behaviors, performance on puzzle tasks) and performance as *outcomes* (i.e., criteria reflecting results of performance behaviors; e.g. final grade on class project, ratings of work outcomes), as well as between performance as *efficiency* (i.e., team effectiveness with consideration of the associated inputs; e.g. return on investment, team output over time) and performance as *effectiveness* (evaluation of team performance results, with no consideration of what went into achieving such results; e.g. total team output, ratings of quality; Beal et al., 2003).

Traditional versus modern teams. To determine the degree to which teams could be considered modern, we first coded for various characteristics of modern teams identified by previous scholars. These characteristics include virtuality of communication, team member distribution, team globalness (aligning with the *technology and distance* theme described by Tannenbaum et al., 2012), multiple team membership, team lifespan, team stability, team boundaries (aligning with the *dynamic composition* theme described by Tannenbaum et al., 2012), leadership structure, role clarity (aligning with the

empowering and delayering theme described by Tannenbaum et al., 2012), behavioral interdependence, and multiple stakeholders (aligning with additional task-focused changes taking place in modern teams described by Wageman et al., 2012). Each of these codes corresponded with a numeric value, where higher scores were considered more modern, as further described below.

Teams who worked together primarily in person were coded as *face-to-face*, those who worked both face-to-face and through virtual tools were coded as *hybrid*, and those who used only virtual tools were coded as *fully virtual*, in line with previous research (Mesmer-Magnus et al., 2011). These codes were assigned values of 0, 1, and 2, respectively, where higher scores were indicative of greater modernity. When team members primarily worked in the same geographic region, *distribution* was coded as low (0), and conversely, it was coded as high (1) when team members were distributed across geographic regions or nations (Tannenbaum et al., 2012; Wageman et al., 2012). Similarly, teams comprised of members working from a single nation were considered low (0) on *team globalness*, whereas those including members from multiple nations were coded as high (1).

The code for *multiple team membership* (0 = no, 1 = yes) was assigned based on whether or not individuals worked on more than one team within a single organization or context (Tannenbaum et al., 2012; Wageman et al., 2012). In instances where team membership was fairly stable, teams were coded as high (0) in *team stability*, whereas the low (1) team stability code was utilized when different team members cycled in and out of the team over time. *Team lifespan* was coded based on the team's shared history and future (Feitosa et al., 2020)—teams who worked together over longer periods of time and had a shared past and future together were coded as intact (0), those that came to together for a shorter period of time to work together on a particular project and who may or may not have a shared history and future were coded as short-term (1), and those that came together initially for a brief task and then disbanded were considered ad hoc (2). When teams had clear boundaries and only included members from a specific area within the organization they were considered high (0) on *team boundaries*, and conversely, when they included members from different areas within the organization or other organizations, they were coded as low (1) on team boundaries (Tannenbaum et al., 2012; Wageman et al., 2012).

Leadership structure was coded as hierarchical (0) when one individual, either internal or external to the team was designated as the leader, and shared (1) when leadership responsibilities were distributed among more than one team member (Marlow et al., 2018). In teams where each member had a clearly defined role or purpose, *role clarity* was considered to be high (0), whereas teams characterized by more fluid and ambiguous roles were coded as low (1) (Tannenbaum et al., 2012; Wageman et al., 2012). In coding *behavioral interdependence*, we considered whether or not the team could perform their task without actually working together extensively, regardless of the extent to which the task called for it (i.e., structural interdependence; Wageman et al., 2012). If the task could not be completed without team members actually interacting with one another, the high (0) code was utilized, but if the team could feasibly complete the task with limited interaction (e.g., dividing parts of a project up even if they are meant to be performed together), the low (1) code was utilized. Finally, when teams were required to meet the needs of only a single client or stakeholder, they were considered "no" (0) on the *multiple stakeholders* code, whereas those who were required to meet the needs of multiple clients or stakeholders were coded as "yes" (1).

A total score across each of these coding categories was calculated so that the overall extent to which a team was characterized by modern features could be examined as a continuous variable.

Analyses

We used Hunter and Schmidt's (2004) meta-analytic procedures, which are grounded in the random-effects model. This approach accounts for the heterogeneity of effect sizes, enabling non-conditional inferences, where findings can be generalized beyond the observed studies included in the meta-analytic sample (Hedges & Vevea, 1998). If sufficient information was available, effect sizes were corrected individually for unreliability in both cohesion and performance measures, using alpha coefficients. When coefficients were not provided, mean reliabilities of similar measures were imputed to make corrections. If multiple effect sizes pertaining to the same variables were available in a single sample, composite effect sizes were calculated (Nunnally, 1978). If information necessary to generate a composite was unavailable, the mean of effect sizes was calculated. When composites or averages were utilized, reliabilities of corresponding measures were also combined using the Spearman-Brown formula, which provides a reliability estimate of combined effect sizes. Finally, in line with Hunter and Schmidt's approach (2004), meta-analyses were calculated using a weighted mean estimate of the overall effect size, where each independent sample's effect size was weighted by its sample size.

Results

To interpret results, 95% confidence intervals surrounding each meta-analytic effect size were calculated. Confidence intervals provide insight about the degree to which effect size estimates are accurate or contain sampling error (Whitener, 1990). Estimated population mean effect sizes were considered significantly different from zero when 95% confidence intervals did not include zero (Aguinis et al., 2011). Although not linked to a specific hypothesis, we began by assessing the overall cohesion-performance relationship, as it serves as the foundation for the remainder of our analyses. Consistent with previous meta-analyses, the relationship was moderate and significant ($\hat{\rho} = .29$; 95% CI [.26, .31]) (see Table 1). To assess the possibility of publication bias, we conducted trim-and-fill analyses, which generate a symmetrical distribution of effect sizes from the published data and allow for the comparison of observed and adjusted values (Duval & Tweedie, 2000). Confidence intervals for the observed and adjusted meta-analytic correlations substantially overlapped ($\hat{\rho}$ observed = .29; 95% CI [.25, .31] versus $\hat{\rho}$ adjusted = .23; 95% CI [.20, .36]), which can be interpreted as evidence of an absence of publication bias (Gonzalez-Mulé et al., 2019). The associated funnel plot was also examined and did not demonstrate skewness in the distribution of effect sizes. Further, 49 independent samples within our analysis were drawn from unpublished sources. Finally, the failsafe k is 40,381, suggesting it would take at least this number of file-drawer null effects to render the cohesion-performance relationship nonsignificant. Therefore, publication bias does not appear to be an issue in this study.

Before moving forward, we also assessed the possible impact of outliers. Based on a plot analysis and the interquartile approach (Bernerth & Aguinis, 2016), we identified six studies that could be interpreted as outliers. Upon removing those studies, the estimated meta-analytic effect sizes and corresponding confidence intervals remained exactly the same. Thus, because these outliers did not alter our meta-analytic conclusions, we did not remove them from the remaining analyses (Viechtbauer & Cheung, 2010).

To assess the appropriateness of testing for moderators, we calculated the Q-statistic, which determines whether there is variance in the meta-analytic estimate beyond sampling error (Lipsey & Wilson, 2001), and I^2, which determines what percentage of variance cannot be attributed to sampling error (Higgins et al., 2003). The Q-statistic was significant ($Q = 435.63$, $p < .00$), and I^2 was 56%, demonstrating

Table 1. Cohesion-performance relationship, moderated by measurement features.

	k	*N*	*r*	$\hat{\rho}$	SDρ	95% CI_L	95% CI_U	80% CV_L	80% CV_U
Overall relationship	195	12,023	0.25	0.29	0.14	0.26	0.31	0.11	0.46
Dimension(s) measured									
Unidimensional									
Task cohesion	55	2,980	0.29	0.33	0.16	0.27	0.38	0.12	0.54
Social cohesion	112	7,288	0.22	0.25	0.16	0.22	0.29	0.04	0.46
Group pride	11	573	0.32	0.34	0.05	0.26	0.42	0.27	0.41
Multidimensional	60	3,547	0.25	0.28	0.12	0.23	0.32	0.12	0.43
Generic	7	283	0.17	0.18	0.21	0.00	0.36	−0.09	0.45
Level measured									
Referent shift	98	5,843	0.28	0.31	0.13	0.28	0.34	0.15	0.47
Direct consensus	30	2,127	0.18	0.20	0.17	0.14	0.27	−0.01	0.42
Mixed-level	54	3,399	0.27	0.30	0.14	0.26	0.35	0.12	0.48
Measure Focus									
Attitudinally-focused	63	4,631	0.23	0.26	0.16	0.21	0.30	0.05	0.46
Behaviorally-focused	49	2,407	0.30	0.34	0.11	0.29	0.39	0.20	0.48
Mixed focus	68	4,344	0.26	0.29	0.13	0.25	0.33	0.12	0.46
Measurement type x performance type									
Performance as behaviors									
Task cohesion	11	787	0.33	0.38	0.23	0.25	0.51	0.10	0.67
Social cohesion	20	1,000	0.25	0.29	0.19	0.20	0.39	0.04	0.54
Attitudinally-focused	7	363	0.32	0.36	0.09	0.25	0.47	0.25	0.47
Behaviorally-focused	8	387	0.27	0.31	0.19	0.17	0.46	0.06	0.56
Referent shift	18	940	0.26	0.30	0.18	0.21	0.40	0.07	0.53
Direct consensus	2	43	0.13	0.15	_	0.11	0.19	_	_
Performance as outcomes									
Task cohesion	36	1,773	0.29	0.32	0.12	0.26	0.38	0.17	0.48
Social cohesion	73	4,993	0.21	0.23	0.16	0.19	0.27	0.03	0.44
Attitudinally-focused	43	3,377	0.20	0.22	0.16	0.17	0.28	0.02	0.43
Behaviorally-focused	32	1,622	0.30	0.34	0.09	0.28	0.39	0.22	0.45
Referent shift	61	3,784	0.27	0.30	0.10	0.26	0.34	0.16	0.43
Direct consensus	24	1,872	0.15	0.17	0.17	0.10	0.25	−0.04	0.38
Performance as efficiency									
Task cohesion	12	525	0.23	0.25	0.16	0.13	0.36	0.04	0.46
Social cohesion	28	1,221	0.13	0.15	0.16	0.07	0.23	−0.05	0.35
Attitudinally-focused	17	1,045	0.19	0.20	0.14	0.12	0.29	0.03	0.38
Behaviorally-focused	7	292	0.36	0.39	0.04	0.29	0.50	0.35	0.44
Referent shift	19	973	0.21	0.24	0.05	0.17	0.30	0.18	0.29
Direct consensus	11	729	0.15	0.16	0.15	0.05	0.27	−0.03	0.35
Performance as effectiveness									
Task cohesion	35	1,972	0.30	0.34	0.17	0.27	0.40	0.12	0.55
Social cohesion	64	4,480	0.23	0.26	0.15	0.22	0.31	0.07	0.46
Group pride	6	251	0.30	0.32	_	0.22	0.41	_	_
Attitudinally-focused	28	2,210	0.21	0.24	0.15	0.17	0.30	0.05	0.43
Behaviorally-focused	28	1,326	0.31	0.36	0.14	0.29	0.42	0.18	0.53
Referent shift	56	3,295	0.28	0.31	0.13	0.27	0.36	0.14	0.49
Direct consensus	13	946	0.19	0.23	0.18	0.13	0.33	0.00	0.46

Note. k = number of correlations; N = total sample size; r = average uncorrected correlation; ρ = average true score correlation; CI = confidence interval; CV = credibility interval.

moderate heterogeneity (Higgins et al., 2003). Based on these values, we concluded justification for examining moderators, and proceeded with moderator analyses. In line with prior work (e.g., Beal et al., 2003; DeChurch & Mesmer-Magnus, 2010), we compared confidence intervals, and considered relationships to be significantly different from one another when the effect size for one level of the moderator did not fall within the 95% confidence interval of the other level of the moderator, and vice-versa.

Cohesion conceptualization and measurement

Cohesion dimensions. Each cohesion dimension significantly related to performance independently, and consistent with Hypothesis 1, the task cohesion relationship ($\hat{\rho} = .33$; 95% CI [.27, .38] was significantly stronger than social cohesion ($\hat{\rho} = .25$; 95% CI [.22, .29], but in contrast to this hypothesis, it was comparable to group pride ($\hat{\rho} = .34$; 95% CI [.26, .42]). Thus, only partial support was found for Hypothesis 1. Contradictory to Hypothesis 2, multidimensional measures of cohesion did not show stronger relationships with performance ($\hat{\rho} = .28$; 95% CI [.23, .32]) compared to any of the unidimensional measures on their own (task, social, or group pride). Interestingly, the cohesion-performance relationship was weaker and non-significant when generic cohesion measures were used ($\hat{\rho} = .18$; 95% CI [.00, .36]), indicating that although the scope of dimensionality did not make a difference, it is important for cohesion measures to be specific in the dimension(s) they capture.

Item level and focus. Measures capturing cohesion through referent shift items showed significantly stronger relationships with performance ($\hat{\rho} = .31$; 95% CI [.28, .34]), than those using direct consensus ($\hat{\rho} = .20$; 95% CI [.14, .27]), in support of Hypothesis 3. Referent shift and mixed-level measures ($\hat{\rho} = .30$; 95% CI [.26, .35] showed nearly identical relationships, with mixed measures also performing significantly better than direct consensus measures. In line with Hypothesis 4, behaviorally-focused measures related to performance significantly more ($\hat{\rho} = .34$; 95% CI [.29, .39]) than attitudinally-focused measures ($\hat{\rho} = .26$; 95% CI [.21, .30]).

Alignment with performance measures. Hypotheses 5 and 6 a-c related to the distance between cohesion and performance measures. First, we proposed that when cohesion was linked to performance metrics that are more distal in nature, it would become more important (i.e., relationships would be stronger) to use cohesion measures that are more proximal as compared to distal, and that these differences would be less pronounced when cohesion was linked to more proximal performance metrics. To assess this, we started by examining relationships when cohesion was linked to performance as outcomes (i.e., distal). Here, the relationship was significantly stronger when measures captured task cohesion ($\hat{\rho} = .32$; 95% CI [.26, .38]) compared to social cohesion ($\hat{\rho} = .23$; 95% CI [.19, .27]), when they focused on behaviors ($\hat{\rho} = .34$; 95% CI [.28, .39]) versus attitudes ($\hat{\rho} = .22$; 95% CI [.17, .28]), and when they used referent shift ($\hat{\rho} = .30$; 95% CI [.26, .34]) rather than direct consensus ($\hat{\rho} = .17$; 95% CI [.10, .25]). Making the same comparisons when cohesion was linked to performance as behaviors (i.e., proximal), only one significant difference emerged, that between referent shift ($\hat{\rho} = .30$; 95% CI [.21, .40]) and direct consensus ($\hat{\rho} = .15$; 95% CI [.11, .19]) items. We note the small k of 2 for direct consensus approaches, which may be contributing to this difference.

Next, we examined these relationships when cohesion was linked to performance as effectiveness (i.e., distal). Here, the relationship was significantly stronger when measures captured behaviors ($\hat{\rho} = .36$; 95% CI [.29, .42]) versus attitudes ($\hat{\rho} = .24$; 95% CI [.17, .30]) and task cohesion ($\hat{\rho} = .34$; 95% CI [.27, .40]) versus social cohesion ($\hat{\rho} = .26$; 95% CI [.22, .31]). In

line with expectations, the link was also stronger for referent shift ($\hat{\rho} = .31$; 95% CI [.27, .36]) versus direct consensus ($\hat{\rho} = .23$; 95% CI [.13, .33]), but this difference did not reach significance. No difference emerged between task cohesion and group pride. Examining these comparisons when cohesion was connected to performance as efficiency (i.e., proximal), we saw only one significant difference—the relationship was significantly stronger for behavioral ($\hat{\rho} = .39$; 95% CI [.29, .50]) versus attitudinal ($\hat{\rho} = .20$; 95% CI [.12, .29]) measures. Taken together, not every comparison yielded expected results, but a general trend did emerge where proximal, versus distal cohesion metrics tended to show stronger relationships when they were related to distal measures of performance, while fewer differences emerged when cohesion was linked to proximal measures of performance. Thus, partial support was found for Hypotheses 5 and 6.

Cohesion in traditional versus modern teams

To assess the moderating influence of modern team characteristics, we conducted continuous moderator variable analyses grounded in the random-effects model (Field & Gillett, 2010), first starting with the overall cohesion relationship to serve as a foundation, then including measurement features to evaluate potential three-way interactions. As depicted in Table 2, none of these relationships were significantly moderated by degree of modernness, failing to support Hypotheses 7–9.

Although these Hypotheses were not supported, we conducted a series of analyses to further explore the impact of modern characteristics. We generally theorized that modern characteristics would impact the cohesion-performance relationship in similar manners, but it is possible that the magnitude of effects may differ across modern characteristics, or even that certain characteristics may impact the relationship in opposing ways. We therefore examined each characteristic individually rather than only as a total score. Several characteristics (team stability, team boundaries, team member distribution, and team globalness) did not have sufficient *k*'s to conduct these analyses, thus are excluded from the discussion of these results below.

Table 2. Cohesion-performance relationship, moderated by measurement features and degree of modernness.

Analysis	*k*	*B*	*SE*	*t*-value	*p*-value
Overall relationship	189	−0.01	0.01	−1.58	0.12
Task cohesion	48	−0.02	0.02	−1.05	0.30
Social cohesion	111	−0.01	0.01	−0.93	0.36
Group pride	11	0.01	0.13	0.46	0.66
Direct consensus	28	−0.02	0.02	−0.83	0.42
Referent shift	96	0.00	0.01	0.03	0.98
Attitudinally-focused	62	−0.01	0.02	−0.88	0.39
Behaviorally-focused	47	0.02	0.02	0.94	0.36

We began by examining the overall cohesion-performance relationship to provide context for interpreting the subsequent three-way interactions. As depicted in Table 3, results yielded several significant interactions. In many instances, the cohesion-performance relationship was weaker when the team was characterized as more modern: shared leadership ($\hat{\rho} = .25$; 95% CI [.21, .29]) versus hierarchical leadership ($\hat{\rho} = .31$; 95% CI [.28, .34]), roles not clearly defined ($\hat{\rho} = .24$; 95% CI [.20, .28]), versus clearly defined ($\hat{\rho} = .33$; 95% CI [.30, .36]), low behavioral interdependence ($\hat{\rho} = .26$; 95% CI [.23, .29]) versus high behavioral interdependence ($\hat{\rho} = .33$; 95% CI [.29, .37]), and ad hoc teams ($\hat{\rho} = .20$; 95% CI [.15, .26]) compared to short term ($\hat{\rho} = .27$; 95% CI [.22, .32]) and intact teams ($\hat{\rho} = .32$; 95% CI [.29, .35]). Short term teams also showed a marginally weaker relationship compared to intact.

In other instances, however, the opposite pattern was observed, where the cohesion-

Table 3. Overall cohesion-performance relationship, moderated by modern characteristics.

	k	*N*	*r*	$\hat{\rho}$	SDρ	95% CIL	95% CIU	80% CVL	80% CVU
Face-to-face	108	5,478	0.26	0.29	0.15	0.26	0.33	0.10	0.49
Hybrid	71	5,847	0.24	0.27	0.12	0.23	0.31	0.11	0.43
Fully virtual	11	549	0.31	0.36	0.08	0.27	0.45	0.26	0.46
Lifespan—Intact	96	6,568	0.28	0.32	0.12	0.29	0.35	0.16	0.48
Lifespan—Short Term	58	3,399	0.24	0.27	0.15	0.22	0.32	0.07	0.47
Lifespan—Ad Hoc	36	1,907	0.19	0.20	0.10	0.15	0.26	0.07	0.33
Multiple team membership—No	165	10,272	0.25	0.28	0.13	0.25	0.31	0.11	0.45
Multiple team membership—Yes	24	1,529	0.29	0.32	0.14	0.26	0.39	0.14	0.51
Leadership—Hierarchical	100	6,970	0.27	0.31	0.12	0.28	0.34	0.16	0.46
Leadership—Shared	88	4,743	0.23	0.25	0.15	0.21	0.29	0.06	0.44
Clearly Defined Roles—Yes	99	6,283	0.29	0.33	0.12	0.30	0.36	0.18	0.48
Clearly Defined Roles—No	90	5,524	0.22	0.24	0.14	0.20	0.28	0.06	0.42
Behavioral Interdependence—High	64	3,505	0.29	0.33	0.11	0.29	0.37	0.19	0.47
Behavioral Interdependence—Low	115	7,745	0.23	0.26	0.14	0.23	0.29	0.08	0.44
Multiple Stakeholders—No	111	6,813	0.22	0.24	0.14	0.21	0.28	0.07	0.42
Multiple Stakeholders—Yes	79	5,061	0.31	0.34	0.11	0.31	0.38	0.20	0.49

Note. k = number of correlations; N = total sample size; r = average uncorrected correlation; ρ = average true score correlation; CI = confidence interval; CV = credibility interval.

performance relationship was stronger when modern characteristics were present. The link was stronger when teams had multiple stakeholders ($\hat{\rho}$ = .34; 95% CI [.31, .38]) compared to a single stakeholder ($\hat{\rho}$ = .24; 95% CI [.21, .28]), and was marginally stronger in fully virtual ($\hat{\rho}$ = .36; 95% CI [.27, .45]) compared to hybrid ($\hat{\rho}$ = .27; 95% CI [.23, .31]) team settings. No interaction was observed for the multiple team membership characteristic.

Cohesion dimensions. For Hypothesis 7a, we proposed a three-way interaction such that the task cohesion-performance relationship would be stronger when teams were more modern compared to more traditional. This pattern was observed for the stakeholders characteristic, where a significantly stronger relationship was found for multiple ($\hat{\rho}$ = .40; 95% CI [.30, .50]) compared to single ($\hat{\rho}$ = .25; 95% CI [.20, .35]) stakeholders (see Table 4). However, the opposite pattern was found for the characteristics team lifespan and leadership structure. The task cohesion-performance relationship was weaker for ad hoc ($\hat{\rho}$ = .19; 95% CI [.08, .31]) compared to short term ($\hat{\rho}$ = .32; 95% CI [.23, .41]) or intact ($\hat{\rho}$ = .39; 95% CI [.29, .48]) teams. Likewise, the link was weaker when leadership was shared ($\hat{\rho}$ = .24; 95% CI [.16, .31]) versus hierarchical ($\hat{\rho}$ = .40; 95% CI [.48, .31]). No other significant differences emerged for task cohesion.

For Hypothesis 7b, we proposed a three-way interaction such that the social cohesion-performance relationship would be weaker when teams were more modern compared to more traditional. This pattern was observed for team lifespan, role clarity, and behavioral interdependence, as depicted in Table 5. Specifically, the relationship between social cohesion and performance was weaker in ad hoc teams ($\hat{\rho}$ = .15; 95% CI [.07, .22]) compared to short term ($\hat{\rho}$ = .25; 95% CI [.18, .32]) or intact ($\hat{\rho}$ = .29; 95% CI [.24, .33]) teams, when roles were not clearly defined ($\hat{\rho}$ = .21; 95% CI [.16, .26]) compared to when they were ($\hat{\rho}$ = .29; 95% CI [.25, .34]), and when behavioral interdependence was low ($\hat{\rho}$ = .21; 95% CI [.16, .25]) versus high ($\hat{\rho}$ = .32; 95% CI [.27, .36]). However, the opposite pattern was observed for

Table 4. Relationship between measures of task cohesion and performance, moderated by modern characteristics.

	k	*N*	*r*	$\hat{\rho}$	SDρ	95% CIL	95% CIU	80% CVL	80% CVU
Face-to-face	31	1,430	0.27	0.30	0.20	0.22	0.39	0.04	0.57
Hybrid	15	785	0.28	0.32	0.15	0.23	0.41	0.13	0.51
Lifespan—Intact	23	1,077	0.33	0.39	0.21	0.29	0.48	0.12	0.66
Lifespan—Short Term	13	658	0.28	0.32	0.12	0.23	0.41	0.17	0.47
Lifespan—Ad Hoc	12	601	0.18	0.19	0.16	0.08	0.31	−0.02	0.40
Multiple team membership—No	42	2,129	0.28	0.31	0.20	0.24	0.38	0.06	0.56
Multiple team membership—Yes	5	134	0.31	0.37	0.10	0.21	0.54	0.25	0.50
Leadership—Hierarchical	26	1,160	0.35	0.40	0.21	0.48	0.31	0.13	0.66
Leadership—Shared	22	1,176	0.22	0.24	0.14	0.16	0.31	0.06	0.41
Clearly Defined Roles—Yes	26	1,207	0.30	0.35	0.22	0.26	0.44	0.07	0.63
Clearly Defined Roles—No	22	1,129	0.26	0.28	0.15	0.20	0.36	0.09	0.47
Behavioral Interdependence—High	17	799	0.23	0.27	0.26	0.14	0.40	−0.06	0.60
Behavioral Interdependence—Low	25	1,213	0.27	0.30	0.12	0.23	0.37	0.14	0.46
Multiple Stakeholders—No	27	1,520	0.27	0.25	0.17	0.20	0.35	0.06	0.48
Multiple Stakeholders—Yes	21	816	0.34	0.40	0.21	0.30	0.50	0.13	0.67

Note. *k* = number of correlations; *N* = total sample size; *r* = average uncorrected correlation; ρ = average true score correlation; CI = confidence interval; CV = credibility interval.

Table 5. Relationship between measures of social cohesion and performance, moderated by modern characteristics.

	k	*N*	*r*	$\hat{\rho}$	SDρ	95% CIL	95% CIU	80% CVL	80% CVU
Face-to-face	65	3,725	0.21	0.24	0.18	0.19	0.29	0.01	0.46
Hybrid	39	3,168	0.23	0.26	0.15	0.20	0.31	0.07	0.45
Fully virtual	7	350	0.25	0.31	0.07	0.20	0.42	0.22	0.40
Lifespan—Intact	56	3,836	0.25	0.29	0.14	0.24	0.33	0.11	0.46
Lifespan—Short Term	33	2,150	0.22	0.25	0.19	0.18	0.32	0.00	0.49
Lifespan—Ad Hoc	22	1,257	0.13	0.15	0.14	0.07	0.22	−0.02	0.32
Multiple team membership—No	94	6,049	0.21	0.24	0.16	0.20	0.27	0.03	0.44
Multiple team membership—Yes	17	1,194	0.29	0.33	0.15	0.25	0.41	0.14	0.52
Leadership—Hierarchical	59	3,990	0.24	0.27	0.13	0.23	0.31	0.11	0.43
Leadership—Shared	51	3,160	0.20	0.23	0.19	0.17	0.28	−0.02	0.47
Clearly Defined Roles—Yes	56	3,431	0.26	0.29	0.13	0.25	0.34	0.13	0.46
Clearly Defined Roles—No	55	3,812	0.19	0.21	0.18	0.16	0.26	−0.01	0.44
Behavioral Interdependence—High	39	2,498	0.28	0.32	0.10	0.27	0.36	0.19	0.45
Behavioral Interdependence—Low	65	4,304	0.18	0.21	0.17	0.16	0.25	−0.01	0.43
Multiple Stakeholders—No	66	4,346	0.19	0.21	0.17	0.16	0.25	−0.01	0.42
Multiple Stakeholders—Yes	45	2,897	0.27	0.32	0.13	0.27	0.36	0.15	0.49

Note. *k* = number of correlations; *N* = total sample size; *r* = average uncorrected correlation; ρ = average true score correlation; CI = confidence interval; CV = credibility interval.

multiple team membership and multiple stakeholders. The social cohesion-performance relationship was stronger when individuals had multiple team memberships ($\hat{\rho}$ = .33; 95% CI [.25, .41]) compared to when they did not ($\hat{\rho}$ = .24; 95% CI [.20, .27]) and when there

Table 6. Relationship between measures of group pride and performance, moderated by modern characteristics.

	k	*N*	*r*	$\hat{\rho}$	SDρ	95% CIL	95% CIU	80% CVL	80% CVU
Face-to-face	6	220	0.29	0.30	_	0.19	0.42	_	_
Hybrid	5	353	0.33	0.37	0.08	0.26	0.48	0.27	0.47
Lifespan—Intact	7	352	0.30	0.33	_	0.24	0.42	_	_
Lifespan—Short Term	3	200	0.35	0.39	0.11	0.22	0.56	0.24	0.54
Leadership—Hierarchical	7	311	0.33	0.37	0.06	0.26	0.47	0.28	0.45
Leadership—Shared	4	262	0.30	0.32	0.03	0.21	0.44	0.28	0.37
Clearly Defined Roles—Yes	8	455	0.33	0.36	0.03	0.27	0.44	0.32	0.39
Clearly Defined Roles—No	3	118	0.27	0.30	0.09	0.11	0.49	0.18	0.42
Behavioral Interdependence—High	5	199	0.29	0.31	_	0.18	0.44	_	_
Behavioral Interdependence—Low	6	374	0.33	0.36	0.06	0.26	0.46	0.29	0.44
Multiple Stakeholders—No	4	231	0.28	0.31	0.07	0.17	0.44	0.22	0.40
Multiple Stakeholders—Yes	7	342	0.34	0.37	0.02	0.28	0.47	0.35	0.39

Note. k = number of correlations; N = total sample size; r = average uncorrected correlation; ρ = average true score correlation; CI = confidence interval; CV = credibility interval.

were multiple ($\hat{\rho}$ = .32; 95% CI [.27, .36]) versus single stakeholders ($\hat{\rho}$ = .21; 95% CI [.16, .25]).

For Hypothesis 7c, we proposed a three-way interaction such that the group pride-performance relationship would be stronger when teams were more modern compared to more traditional. As depicted in Table 6, there were no significant differences across modern characteristics when group pride measures were utilized, failing to support this hypothesis.

Item level and focus. For Hypothesis 8, we proposed a three-way interaction such that when direct consensus items are used, the cohesion-performance relationship would be stronger in teams that are more modern compared to more traditional. As shown in Table 7, this pattern was observed for virtuality, where the cohesion-performance relationship was stronger in fully virtual teams ($\hat{\rho}$ = .39; 95% CI [.25, .52]) compared to teams that were hybrid ($\hat{\rho}$ = .19; 95% CI [.09, .28]) or face-to-face ($\hat{\rho}$ = .17; 95% CI [.05, .28]), as well as for stakeholders, where the relationship was stronger for multiple ($\hat{\rho}$ = .30; 95% CI [.21, .39]) versus single ($\hat{\rho}$ = .14; 95% CI [.05, .22]) stakeholders. However, several of the modern characteristics yielded the opposite pattern. The cohesion-performance relationship was weaker when leadership was shared ($\hat{\rho}$ = .14; 95% CI [.03, .24]) versus hierarchical ($\hat{\rho}$ = .26; 95% CI [.19, .33]), when roles were not clearly defined ($\hat{\rho}$ = .10; 95% CI [.00, .20]) versus when they were ($\hat{\rho}$ = .28; 95% CI [.20, .35]), and when behavioral interdependence was low ($\hat{\rho}$ = .14; 95% CI [.05, .23]) versus high ($\hat{\rho}$ = .32; 95% CI [.26, .39]). Interestingly, short term teams showed the weakest, notably nonsignificant relationship ($\hat{\rho}$ = .05; 95% CI [-.07, .17]), which was weaker than intact ($\hat{\rho}$ = .29; 95% CI [.21, .36]) and ad hoc teams ($\hat{\rho}$ = .16; 95% CI [.02, .30]) teams.

Although we did not formally propose a null hypothesis, we expected the cohesion-performance relationship would be comparable when teams were more modern versus more traditional when referent shift items were utilized. This pattern was observed for the modern characteristics virtually, leadership structure, and role clarity (see Table 8). However, differences were observed for several other characteristics. Specifically, the cohesion-performance relationship was stronger in more modern teams

Table 7. Relationship between direct consensus measures and performance, moderated by modern characteristics.

	k	*N*	*r*	$\hat{\rho}$	SDρ	95% CIL	95% CIU	80% CVL	80% CVU
Face-to-face	14	556	0.15	0.17	0.19	0.05	0.28	−0.07	0.40
Hybrid	11	1,258	0.17	0.19	0.14	0.09	0.28	0.01	0.37
Fully virtual	4	205	0.31	0.39	0.06	0.25	0.52	0.31	0.47
Lifespan—Intact	13	1,095	0.25	0.29	0.10	0.21	0.36	0.16	0.42
Lifespan—Short Term	7	506	0.04	0.05	0.12	−0.07	0.17	−0.11	0.20
Lifespan—Ad Hoc	9	418	0.14	0.16	0.17	0.02	0.30	−0.06	0.38
Leadership—Hierarchical	12	1,008	0.23	0.26	0.08	0.19	0.33	0.16	0.36
Leadership—Shared	16	918	0.11	0.14	0.20	0.03	0.24	−0.12	0.39
Clearly Defined Roles—Yes	15	1,157	0.24	0.28	0.11	0.20	0.35	0.14	0.41
Clearly Defined Roles—No	14	862	0.09	0.10	0.16	0.00	0.20	−0.11	0.31
Behavioral Interdependence—High	12	648	0.27	0.32	_	0.26	0.39	_	_
Behavioral Interdependence—Low	17	1,371	0.13	0.14	0.17	0.05	0.23	−0.08	0.36
Multiple Stakeholders—No	19	1,222	0.12	0.14	0.15	0.05	0.22	−0.06	0.33
Multiple Stakeholders—Yes	10	797	0.27	0.30	0.11	0.21	0.39	0.16	0.45

Note. *k* = number of correlations; *N* = total sample size; *r* = average uncorrected correlation; ρ = average true score correlation; CI = confidence interval; CV = credibility interval.

Table 8. Relationship between referent shift measures and performance, moderated by modern characteristics.

	k	*N*	*r*	$\hat{\rho}$	SDρ	95% CIL	95% CIU	80% CVL	80% CVU
Face-to-face	59	3,399	0.27	0.31	0.14	0.26	0.35	0.13	0.48
Hybrid	32	2,206	0.27	0.30	0.10	0.25	0.35	0.17	0.43
Fully virtual	5	174	0.34	0.36	0.16	0.17	0.55	0.16	0.56
Lifespan—Intact	52	3,551	0.26	0.30	0.11	0.26	0.34	0.15	0.44
Lifespan—Short Term	31	1,546	0.34	0.38	0.13	0.32	0.44	0.22	0.54
Lifespan—Ad Hoc	13	682	0.17	0.18	0.08	0.10	0.27	0.08	0.29
Multiple team membership—No	81	4,722	0.26	0.29	0.12	0.26	0.33	0.14	0.45
Multiple team membership—Yes	14	984	0.33	0.37	0.13	0.45	0.28	0.20	0.54
Leadership—Hierarchical	54	3,804	0.26	0.29	0.11	0.25	0.33	0.14	0.43
Leadership—Shared	41	1,907	0.30	0.33	0.13	0.27	0.38	0.16	0.50
Clearly Defined Roles—Yes	50	2,898	0.29	0.33	0.12	0.28	0.37	0.18	0.48
Clearly Defined Roles—No	46	2,881	0.26	0.29	0.13	0.24	0.34	0.12	0.46
Behavioral Interdependence—High	27	1,383	0.33	0.37	0.11	0.31	0.43	0.23	0.51
Behavioral Interdependence—Low	63	4,036	0.25	0.28	0.13	0.24	0.32	0.12	0.44
Multiple Stakeholders—No	54	2,788	0.26	0.28	0.14	0.23	0.33	0.09	0.46
Multiple Stakeholders—Yes	42	2,991	0.29	0.33	0.10	0.29	0.38	0.20	0.46

Note. *k* = number of correlations; *N* = total sample size; *r* = average uncorrected correlation; ρ = average true score correlation; CI = confidence interval; CV = credibility interval.

for multiple team membership [yes: ($\hat{\rho}$ = .37; 95% CI [.45, .28]) versus no: ($\hat{\rho}$ = .29; 95% CI [.26, .33])] but weaker in more modern teams for behavioral interdependence [low: ($\hat{\rho}$ = .28; 95% CI [.24, .32]) versus high: ($\hat{\rho}$ = .37; 95% CI [.31, .43])]. The relationship was also marginally stronger in more modern teams for the multiple stakeholders characteristic [yes: ($\hat{\rho}$ = .33; 95%

Table 9. Relationship between behaviorally-focused measures and performance, moderated by modern characteristics.

	k	*N*	*r*	$\hat{\rho}$	SDρ	95% CIL	95% CIU	80% CVL	80% CVU
Face-to-face	29	1,339	0.29	0.33	0.12	0.26	0.39	0.17	0.48
Hybrid	18	936	0.28	0.32	0.04	0.26	0.38	0.27	0.37
Lifespan—Intact	31	1,640	0.29	0.33	0.04	0.28	0.38	0.27	0.39
Lifespan—Short Term	14	476	0.33	0.37	0.17	0.25	0.48	0.14	0.59
Lifespan—Ad Hoc	3	209	0.24	0.25	0.19	0.02	0.49	0.01	0.49
Multiple team membership—No	43	2,172	0.29	0.33	0.11	0.28	0.38	0.18	0.47
Multiple team membership—Yes	4	80	0.33	0.39	0.06	0.19	0.60	0.31	0.47
Leadership—Hierarchical	32	1,798	0.28	0.33	0.08	0.28	0.38	0.22	0.43
Leadership—Shared	16	527	0.32	0.35	0.17	0.24	0.46	0.14	0.56
Clearly Defined Roles—Yes	31	1,601	0.28	0.32	0.08	0.27	0.37	0.22	0.42
Clearly Defined Roles—No	17	724	0.33	0.36	0.15	0.27	0.45	0.17	0.55
Behavioral Interdependence—High	13	507	0.35	0.39	0.11	0.30	0.49	0.25	0.53
Behavioral Interdependence—Low	30	1,526	0.28	0.32	0.12	0.26	0.38	0.17	0.48
Multiple Stakeholders—No	21	887	0.28	0.31	0.15	0.23	0.40	0.12	0.51
Multiple Stakeholders—Yes	27	1,438	0.30	0.34	0.07	0.29	0.39	0.25	0.43

Note. k = number of correlations; N = total sample size; r = average uncorrected correlation; ρ = average true score correlation; CI = confidence interval; CV = credibility interval.

CI [.29, .38]) versus no: ($\hat{\rho}$ = .28; 95% CI [.23, .33])]. Interestingly, the relationship was strongest in short term teams ($\hat{\rho}$ = .38; 95% CI [.32, .44]), which was significantly stronger than in intact teams ($\hat{\rho}$ = .30; 95% CI [.26, .34]). For ad hoc teams ($\hat{\rho}$ = .18; 95% CI [.10, .27]), the relationship was weaker compared to both short term and intact teams.

Hypothesis 9a proposed a three-way interaction such that when behaviorally-focused items are used, the cohesion-performance relationship would be stronger when teams are more modern compared to more traditional. This pattern was not observed—no significant differences were found across any of the modern characteristics (see Table 9).

Finally, Hypothesis 9b proposed a three-way interaction such that when attitudinally-focused items are used, the cohesion-performance relationship would be weaker when teams are more modern compared to more traditional. As depicted in Table 10, this pattern was observed for role clarity and behavioral interdependence, where the cohesion-performance relationship was weaker when roles were not clearly defined ($\hat{\rho}$ = .20; 95% CI [.12, .27]) versus when they were ($\hat{\rho}$ = .31; 95% CI [.26, .36]), and when behavioral interdependence was low ($\hat{\rho}$ = .19; 95% CI [.13, .26]) versus high ($\hat{\rho}$ = .37; 95% CI [.33, .41]). However, the opposite pattern was found for multiple team membership, multiple stakeholders, and virtuality. The cohesion-performance relationship was stronger when members held multiple team memberships ($\hat{\rho}$ = .38; 95% CI [.25, .51]) compared to when they did not ($\hat{\rho}$ = .24; 95% CI [.20, .29]) and when teams met the needs of multiple stakeholders ($\hat{\rho}$ = .32; 95% CI [.25, .38]) compared to when they did not ($\hat{\rho}$ = .22; 95% CI [.15, .28]). Similarly, the relationship was stronger for fully virtual ($\hat{\rho}$ = .36; 95% CI [.25, .47]) versus hybrid teams ($\hat{\rho}$ = .23; 95% CI [.16, .30]).

Discussion

Cohesion has long been considered one of *the* most important constructs for the study of teams (Carron & Brawley, 2000), but due to

Table 10. Relationship between attitudinally-focused measures and performance, moderated by modern characteristics.

	k	*N*	*r*	$\hat{\rho}$	SDρ	95% CIL	95% CIU	80% CVL	80% CVU
Face-to-face	33	2,019	0.25	0.27	0.17	0.21	0.34	0.06	0.49
Hybrid	23	2,283	0.21	0.23	0.16	0.16	0.30	0.03	0.43
Fully virtual	6	279	0.29	0.36	_	0.25	0.47	_	_
Lifespan—Intact	29	2,516	0.24	0.27	0.13	0.22	0.33	0.10	0.45
Lifespan—Short Term	16	1,184	0.22	0.26	0.22	0.15	0.37	−0.02	0.54
Lifespan—Ad Hoc	17	881	0.21	0.23	0.12	0.14	0.31	0.07	0.38
Multiple team membership—No	53	4,012	0.22	0.24	0.15	0.20	0.29	0.05	0.43
Multiple team membership—Yes	9	569	0.34	0.38	0.18	0.25	0.51	0.14	0.61
Leadership—Hierarchical	30	2,685	0.23	0.25	0.11	0.20	0.30	0.11	0.39
Leadership—Shared	30	1,735	0.23	0.26	0.21	0.18	0.34	−0.01	0.53
Clearly Defined Roles—Yes	32	2,509	0.28	0.31	0.12	0.26	0.36	0.16	0.47
Clearly Defined Roles—No	30	2,072	0.18	0.20	0.18	0.12	0.27	−0.03	0.42
Behavioral Interdependence—High	25	1,562	0.32	0.37	_	0.33	0.41	_	_
Behavioral Interdependence—Low	36	2,951	0.18	0.19	0.16	0.13	0.26	−0.01	0.40
Multiple Stakeholders—No	39	2,535	0.20	0.22	0.17	0.15	0.28	0.00	0.43
Multiple Stakeholders—Yes	23	2,046	0.28	0.32	0.13	0.25	0.38	0.15	0.48

Note. k = number of correlations; N = total sample size; r = average uncorrected correlation; ρ = average true score correlation; CI = confidence interval; CV = credibility interval.

longstanding inconsistencies surrounding its conceptualization and measurement, as well as key changes taking place in the modern team landscape, important questions regarding its relationship with performance have remained. We used meta-analyses to address these questions and advance cohesion theory in numerous ways. Below, we discuss how this work allows for theory elaboration via structuring and horizontal contrasting, as well as the implications of such advancement for organizational practice.

Cohesion conceptualization and measurement

While cohesion continues to be a topic of great interest, this research demonstrates that widespread inconsistency in approaches to conceptualizing and measuring cohesion remain. We looked for commonalities in approaches and identified 17 different measures that were used in at least two different studies, but even for these, the percentage of studies using an original or adapted version of these scales ranged from only 1–5% (see Table 11). Over 100 different measurement approaches were used across studies, with most using a "home grown" metric (20%), a combination of metrics (10%), or some other approach (17%). Thus, an understanding of measurement's role in the cohesion-performance link cannot readily be gained by examining different measures as a whole, but rather, necessitates a breakdown of measurement features.

By exploring measurement features as moderators of the cohesion-performance relationship, this study elaborates on cohesion theory through the structuring approach, which uses empirical research to enhance explanatory potential and predictive adequacy by producing greater understanding of the mechanisms underlying observed relationships (Fisher & Aguinis, 2017). As such, at a high level, the value afforded by this research is two-fold. First, it helps to explain why differences in the

Table 11. Information about common cohesion measures.

Measure	Sample item	Measure scope	Dimension measured	Level measured	Measure focus	% Used	% Adapted version used
Bollen & Hoyle, 1990	*I feel that I belong to this group*	Multi-dimensional	Mixed	Direct consensus	Attitudinally-focused	2%	1%
Carless & DePaola, 2000 (adapted from GEQ)	*I'm unhappy with my team's level of commitment to the task*	Multi-dimensional	Mixed	Mixed	Mixed	1%	1%
Chang & Bordia, 2001 (adapted from GEQ)	*Communicate freely about each other's responsibility*	Multi-dimensional	Mixed	Referent shift	Behavioral-focused	1%	1%
Dobbins & Zacarro, 1986	*The members of my squadron will readily defend each other from criticism by outsiders*	Uni-dimensional	Social	Mixed	Mixed	2%	0%
Group Atmosphere Questionnaire (Fiedler, 1967)	*Quarrelsome-harmonious*	Multi-dimensional	Mixed	Referent shift	Attitudinally-focused	2%	0%
Group Environment Questionnaire (GEQ; Carron et al., 1985)	*Our team is united in trying to reach its goals for performance*	Multi-dimensional	Mixed	Mixed	Mixed	4%	8%
Hoegl & Germuenden, 2001	*It was important to the members of our team to be part of this project*	Multi-dimensional	Mixed	Referent shift	Attitudinally-focused	1%	0%
Lee & Farh, 2004 (adapted from Price & Mueller, 1986)	*How well do members of your group get along with each other?*	Uni-dimensional	Social	Mixed	Behavioral-focused	2%	0%
O'Reilly & Caldwell, 1985; O'Reilly et al., 1989 (adapted from Seashore, 1954)	*How well they stick together*	Uni-dimensional	Social	Referent shift	Behavioral-focused	2%	2%
Podsakoff et al., 1993; Podsakoff & MacKenzie, 1994	*Members of my group work together as a team*	Multi-dimensional	Mixed	Referent shift	Mixed	2%	1%

(continued)

Table 11. (continued)

Measure	Sample item	Measure scope	Dimension measured	Level measured	Measure focus	% Used	% Adapted version used
Rosenfeld & Gilbert, 1989	*If I were to participate in another group like this one, I would want it to include people who are very similar to the ones in this group*	Uni-dimensional	Social	Mixed	Attitudinally-focused	1%	1%
Seashore, 1954	*Do you feel that you are really a part of your work group?*	Uni-dimensional	Social	Mixed	Mixed	5%	4%
Seers, 1989	*My team had a strong sense of togetherness*	Uni-dimensional	Social	Referent shift	Attitudinally-focused	1%	0%
Sport Cohesiveness Questionnaire (Martens et al., 1972)	*Being closely knit as a team*	Multi-dimensional	Mixed	Mixed	Mixed	2%	2%
Staw, 1975; Price & Mueller, 1986	*To what extent were your teammates friendly?*	Uni-dimensional	Social	Mixed	Mixed	1%	2%
Stokes, 1983	*How attractive do you find activities in which you participate as a member of your group?*	Uni-dimensional	Task	Direct consensus	Attitudinally-focused	2%	2%
Zaccaro, 1991	*They enjoyed belonging to their group because they were friends with many of their group members*	Multi-dimensional	Mixed	Direct consensus	Attitudinally-focused	1%	2%
Other	*I felt that my group was focused on completing the task*	Varied	Varied	Varied	Varied	17%	
Home grown scale	*There was a strong feeling of camaraderie among team members*	Varied	Varied	Varied	Varied	20%	
Combination		Varied	Varied	Varied	Varied	10%	

Note. "% used" reflects the percent of studies included in the meta-analysis that used each measure. "% adapted version used" reflects the percent of studies included in the meta-analysis that used an adapted version of each measure.

cohesion-performance relationship have been observed across studies. To varying extents, these relationships have been influenced by the measures used to assess the constructs. In this way, the results of this study provide valuable insight into the mechanisms that underlie the observed relations and how to interpret them. Second, it helps predict the relationships that would be observed if various measurement approaches are used in research and practice. Given the proliferation of cohesion measures, knowledge of how and why the various approaches influence observed relationships helps researchers and practitioners choose the right practices to use to enhance predictive adequacy in their given situations.

This study also advances theory and practice through numerous, more specific avenues. First, as expected, task cohesion showed a stronger relationship with performance than social cohesion, but contrary to hypotheses, the impact of group pride emerged as just as prominent as task cohesion. Considering that group pride has been examined in only two of the seven existing meta-analyses, this is an important contribution and suggests group pride continues to be understudied but should be a focus of future research. Significant differences did not emerge between any of the unidimensional and multidimensional measures, suggesting that even though each cohesion dimension uniquely relates to performance, combining these dimensions through multidimensional metrics does not appear to increase predictive capacity. Task, social, and group pride dimensions perhaps influence performance through similar mechanisms, enabling the measurement of one dimension to yield comparable predictive capacity as multiple dimensions. However, we note an important caveat—to effectively predict performance, unidimensional measures must be specific in that they are designed to capture a particular cohesion dimension rather than the notion of cohesion in general, as generic measures yielded nonsignificant relationships.

These results advance research by showing cohesion does not need to be conceptualized and measured in a multidimensional manner to demonstrate meaningful relationships with performance—any one dimension may be sufficiently broad. Whereas past metas have shown mixed results or have not assessed differences between dimensions, this research shows task cohesion and group pride relate to performance more strongly than social cohesion, which facilitates a deeper understanding of the theory underlying the cohesion-performance relationship. For example, the primary mechanisms through which cohesion influences performance are likely by enabling team processes to run more smoothly and motivating team members to enact the effort and teamwork necessary for success. From a practical standpoint, this suggests shorter-form, unidimensional measures can be used to adequately predict performance when measurement capabilities are restricted and are likely to be most predictive when designed to assess task cohesion or group pride. However, another possibility is that this could have resulted from the way in which performance was typically operationalized. Team performance is broad, yet many studies had more narrow operationalizations of performance (e.g., number of items built, score on a simulation). These more narrow operationalizations may have resulted in greater coefficients for reasons outlined earlier in the principle of congruence. Future research that further explores the scope of both cohesion and performance metrics would therefore be beneficial.

Second, results show more variance in performance can be explained and predicted when referent shift or mixed-level measures are used compared to direct consensus. This advances theory by reinforcing the value of conceptualizing and measuring cohesion at the team-level. Although some conceptualizations have included an individual-level component (e.g., *individual attraction to the group*, Carron et al., 1985), our results reveal a weak relationship

between individual-level measures of cohesion and performance. This suggests such metrics lack construct validity, considering that more broadly, cohesion has been conceptualized as a team-level phenomenon. Measures referencing the team are better able to capture shared bonding, commitment, and pride among team members, which are the factors that ultimately impact performance more so than individual members' perspectives. Notably, however, mixed-level measures performed just as well as referent shift, indicating that conceptualizing cohesion as a multi-level construct does not reduce predictive capacity. Thus, if the individual-level is incorporated into cohesion models, the team-level must also be retained to facilitate construct and predictive validity. For practical purposes, these findings suggest practitioners will be better served by focusing on team-level metrics, particularly when measurement is restricted in some way, as individual-level metrics are inferior in their explanatory and predictive potential.

Third, this research showed behavioral-focused measures were more predictive than attitudinally-focused measures. This advances theory by indicating it is primarily through cohesive behaviors that cohesion can be translated in a manner that affects performance, whereas the relationship between cohesive attitudes and performance can be confounded by other factors. These findings may call for a reconsideration of the cohesion construct, which has primarily been conceptualized as an affective emergent state (Mathieu et al., 2008). Future research should explore the idea of cohesion as a team process. That said, mixed-focus measures were comparable to behaviorally-focused measures, thus, attitudinal approaches do not necessarily need to be abandoned, but should not be the sole approach. Results indicate practitioners would benefit from focusing on behavioral assessments of cohesion, which is in line with recent calls for behavior-based, unobtrusive approaches to cohesion measurement (Salas et al., 2015).

Finally, results showed that explanatory and predictive potential can be enhanced when the distance between cohesion and performance metrics is considered. Generally, when performance criteria are more distal in nature, it becomes particularly important to measure cohesion through more proximal approaches to maximize predictive ability. In contrast, proximal performance criteria are not as susceptible to the impact of varying measurement features, providing direct implications for when different measurement approaches should be used in research and practice. Further, considering proximity allows for a deeper understanding of the mechanisms through which cohesion influences performance, thus advancing future research. For example, the relationship between task cohesion (i.e., proximal) and efficiency (i.e., proximal) is likely driven directly by members' task and teamwork processes, whereas that between social cohesion (i.e., distal) and effectiveness (i.e., distal) will likely also be mediated by interpersonal exchanges, contextual features, etc. The cohesion-performance relationship can therefore be more precisely modeled and understood based on current results. For practical purposes, results encourage the use of proximal measures of both cohesion and performance for maximizing predictive potential. However, distal indicators may be of interest in some settings; in such instances, efforts should be made to use proximal cohesion measures.

In sum, this research brings greater clarity to the cohesion-performance relationship by determining the extent to which it is influenced by measurement features, and indicates which approaches should be selected in future research and practice to maximize predictive capacity. Whereas the longstanding inconsistency in the cohesion literature has been well documented, our efforts advance the science by showing there are significant consequences associated with conceptualizing and evaluating cohesion in different ways, likely stemming from theoretical

differences underlying differing approaches, including degree of proximity. Though it is often used as an umbrella term (Salas et al., 2015), all "cohesion" is not equal. Practically, findings suggest measures capturing task cohesion, assessing the team level, and targeting behavioral manifestations of cohesion are optimal for predicting performance, particularly when performance criteria of interest are more distal in nature.

Cohesion in traditional versus modern teams

By evaluating the impact of modern team characteristics, this research also enables theory elaboration through horizontal contrasting, where insights developed in one context are examined in another to test for potential boundary assumptions and constraints (Fisher & Aguinis, 2017). The value afforded by this research is greater understanding of whether the changes taking place in the modern workplace are altering the predictive capacity of different measurement approaches. Results of this study serve to advance cohesion theory and practice in several important ways.

The overall degree of modern characteristics present in teams did not yield any significant interactions, but a number of important nuances emerged when analyses were broken down by specific modern characteristics. First, although not a primary focus of this study, our results revealed that the overall relationship between cohesion and performance is moderated by several characteristics present in the modern context (5 of the 7 that we examined). This is a novel insight that advances our understanding of the cohesion-performance relationship and warrants additional research attention, particularly since the relationship became weaker as teams became more modern in many of these instances. Second, finding show that the impact of the changes taking place in modern in teams are not uniform. The significance, magnitude, and even direction of effects varied across modern characteristics, suggesting that future research and practice should carefully consider the context surrounding team functioning in order to deepen knowledge and maximize predictive capacity.

Third, we expected the task cohesion-performance relationship would be stronger when teams were more modern, but for many modern characteristics, the relationship was not affected, and for some (team tenure and leadership structure), the relationship actually was weaker. In these instances, teams might not have the opportunity to develop a shared commitment around the task if their time together is limited or resources are being devoted to navigating leadership functions, and performance might be promoted primarily through other mechanisms. Conversely, we expected the social cohesion-performance relationship would be weaker in more modern teams, which was supported for the characteristics team tenure, role clarity, and behavioral interdependence. When modern aspects of these features are present, teams likely become less focused on cultivating social bonds among members. Surprisingly, the social cohesion-performance was stronger when team members had multiple team memberships versus when they didn't. When individuals are part of multiple teams, the social connections within a given team may become the primary factor differentiating their teams and motivating them to exert the effort needed to perform successfully within that particular team. Another interesting finding was that the relationships between both task and social cohesion with performance were stronger when the modern characteristic of having multiple stakeholders was present. Being responsible for meeting the needs of multiple stakeholders may make the task more complex and higher stakes, prompting team members to become more invested and more motivated to get to know the people they are working with to achieve team goals. These represent novel areas for future inquiry.

Particularly surprising was the finding that virtuality did not have an impact on the social cohesion-performance relationship, suggesting that virtual communication need not detract from social bonding among team members, as has often been the case (e.g., Hambley et al., 2007). Leadership structure also did not have an impact. It therefore appears that teams can share leadership functions without experiencing conflict in a manner that disrupts social relationships. Notably, the group pride-performance relationship was not moderated by any of the modern characteristics, which may indicate that the important role of group pride is sustained across a wide range of contexts, but should be interpreted with caution given the low *k*'s in this category.

Fourth, we expected direct consensus items would become more relevant in teams with modern characteristics. This was largely not supported, with the cohesion-performance relationship instead becoming weaker for most modern characteristics (team tenure, leadership structure, role clarity, and behavioral interdependence). This suggests that even in the changing team landscape, the basic conceptualization of cohesion as a team-level emergent construct is still relevant and should be sustained. There were a couple exceptions, however. For the virtuality and multiple stakeholders characteristics, the expected pattern was observed. In fully virtual teams, the relationship between cohesion measured through direct consensus and performance was relatively strong (.39), suggesting that the individual perspective may become more relevant in situations where it is harder for team members to gauge what other members are experiencing and for shared perspectives to emerge. The multiple stakeholders finding is more challenging to interpret, but it may be that the capacity for that characteristic to promote cohesion is so powerful or that cohesion becomes so central to performance that the cohesion-performance relationship can be detected even when less optimal cohesion metrics are utilized.

We expected the cohesion-performance relationship would be comparable when teams were more modern versus traditional when referent shift measures were employed. This was indeed the case for several modern characteristics (virtuality, leadership structure, role clarity, and multiple stakeholders), but other categories yielded mixed results. The cohesion-performance relationship was stronger under conditions of multiple team membership, yet weaker under conditions of low behavioral interdependence. Similar to our theorizing above, being a part of multiple teams might make the shared commitment, bonding, and pride among members of a particular team especially important for differentiating that team and enacting the specific actions necessary to perform successfully. Conversely, when teams spend less time actually working together (low behavioral interdependence), developing shared perspectives likely becomes more challenging, lessening the value of referent shift items for predicting performance. Shared cohesion also appears to be harder to develop in ad hoc teams given the weaker cohesion-performance relationship compared to teams that were short term or intact. Interestingly, the link was actually strongest in short term teams, suggesting that cohesion as an emergent state can be developed even in shorter term situations.

Fifth, the cohesion-performance relationship was expected to be weaker as teams became more modern when attitudinally-focused measured were utilized. This pattern was observed for some modern characteristics (role clarity, behavioral interdependence), but for others, there was no effect (team tenure, leadership structure). In contrast, the relationship was actually stronger when team members held multiple team memberships and teams were characterized as having multiple stakeholders, as well as when they were fully virtual (versus hybrid). These findings were particularly interesting because they reflect some of the few instances in which the effect sizes for attitudinally-focused items (.38, .32, and .36,

respectively) were comparable to those observed for behavioral-focused items throughout. Thus, it appears that some situations may be so conducive to cohesion and/or in which cohesion is so important for performance, that the relationship can be detected even when less optimal measurement approaches are utilized. Lastly, we hypothesized that behaviorally-focused items would be more predictive when teams were more modern compared to more traditional. Although this was not supported, results were still encouraging—no effects were found across modern characteristics within this category, suggesting that behavioral-focused items remain a valuable approach to assessing cohesion across various contexts characteristic of modern teams.

When considering these findings in combination, some notable themes emerge. Specifically, with the exception of group pride, which we devote less attention to given the lack of data for this dimension, measurement approaches that are considered more distal (i.e., social cohesion, direct consensus, attitudinally-focused) appear to be more susceptible to the moderating influence of modern characteristics in comparison to measurement approaches that are more proximal (i.e., task cohesion, referent shift, behaviorally-focused). Modern characteristics moderated cohesion-performance relationships in only approximately 29% of the cases for proximal measures, whereas this number reached 80% for measures that were more distal. This suggests that our broader findings about cohesion measurement best practices can largely be generalized to many modern team contexts.

More nuanced results also reveal that there are certain conditions under which more distal measurement approaches are just as predictive as their proximal counterparts. For example, role clarity and behavioral interdependence are two characteristics that moderated all of the relationships between distal metrics (i.e., social, direct consensus, referent shift) and performance, yet rarely had an impact when proximal metrics were used. For distal measures, cohesion-performance relationships were stronger when roles were clearly defined and behavioral interdependence was high. These contextual features are likely to influence the degree and or quality of interactions among team members. Thus, distal measures of cohesion are only likely to be as predictive of proximal measures when there is a well-defined structure guiding how team members interact. Notably, these specific situations would be considered more traditional, thus may be decreasing in modern contexts. On the other hand, having multiple team memberships is a characteristic that's considered more modern, but was also likely to strengthen the relationship between distal measures of cohesion and performance. Findings therefore suggest that taking the time to identify the specific contextual characteristics of a team would be worthwhile for determining the most optimal approaches to measuring cohesion.

Another significant theme that emerged was the influential role of having multiple stakeholders. This particular modern characteristic has received perhaps the least attention in prior research, but was the most likely to strengthen the cohesion-performance relationship, especially for distal metrics, which otherwise showed weakened relationships when other modern characteristics were present. As described above, having multiple stakeholders is likely to involve greater task complexity, which could make it harder to perform successfully unless the team is cohesive. Further, having others who depend on their work might prompt team members to become more invested, facilitate bonding, and created shared meaning and purpose that drive their work. This is a ripe avenue for future research, particularly since in practical settings, structuring tasks in this manner may be an approach to offsetting other modern characteristics that detract from the cohesion-performance relationship.

Likewise, multiple team membership is another modern characteristic that was generally beneficial for the cohesion-performance relationship, across both proximal and distal

measurement approaches. As theorized about above, when team members are managing multiple teams, cohesion in any given team may become especially important for differentiating and transitioning between teams, allowing for effective performance. Further, shared commitment and bonding may became especially necessary for prompting team members to devote the necessary resources to any given team as they juggle multiple and potentially conflicting responsibilities. This work structure represents another avenue through which the cohesion-performance relationship is sustained or even strengthened in modern settings, in contrast to other characteristics that serve to weaken the relationship, and should receive additional attention in future research. Thus, although we found many instances in which the cohesion-relationship became weaker in modern settings, findings around multiple stakeholders and multiple team membership show that cohesion remains an important component of team effectiveness even as the landscape surrounding team functioning changes.

A surprising finding was that virtuality generally had little impact on the cohesion-performance relationship. This suggests that current technology may allow for communication that is rich enough to prevent the relationship from being impacted, which is encouraging considering that teams are becoming increasingly virtual, even more so than they already were, in the wake of the Covid-19 pandemic. Finally, the cohesion-performance relationship tended to be weaker in ad hoc compared to longer term teams, even in situations when it was expected to be stronger (e.g., when task cohesion was measured). This is perhaps because cohesion is an emergent phenomenon that is developed through repeated interactions and becomes an increasingly important aspect of team effectiveness as teams are together for longer periods of time. Alternatively, it might be that the nature of the work performed by teams with shorter tenures differs from that performed by teams with longer tenures and that cohesion is a more important antecedent for the type of work typically performed by intact or even short term teams.

In summary, our analysis of modern team characteristics yielded several important insights. The changes taking place in modern settings do indeed have meaningful influences on both the cohesion-performance relationship as a whole, and the predictive capacity of specific approaches used to measure team cohesion. Broadly, the best practices derived in the first part of our study (i.e., prioritizing the measurement of task cohesion, referent shift items, and behaviorally-focused items) largely generalize to modern teams in that they remain optimal even when several modern characteristics are present. Further, it may be even more important to adopt these practices in modern teams, considering that more distal measurement approaches (i.e., social cohesion, direct consensus items, attitudinally-focused items) were more susceptible to the impact of modern features, often in a manner that was detrimental to the cohesion-performance relationship. In some instances, more distal measures were just as predictive as proximal measures, suggesting that they should not necessarily be abandoned in future research and practice, but instead, that the context surrounding each team should be carefully considered. Social cohesion in particular is often found to be less predictive of performance, as it indeed was in our broader analyses, but our more fine-grained results revealed effect sizes very comparable to those for task cohesion and group pride across several team contexts. Although most of these contexts are considered more traditional than modern, many of them can still be present in current and future teams, suggesting that the importance of social cohesion has perhaps been underestimated and should not be discounted. Each of these insights provides a rich foundation for driving future research and guiding practices in organizational settings.

Recently, Cronin and George (2020) described how various types of integrative reviews, including meta-analyses, can be used as

powerful tools for making scientific advancements. Building on their ideas, this work synthesizes knowledge through *adjudication*, which presents existing evidence pertaining to a well-established research topic, as well as *redirection*, which proposes a change to the field's perspective on a topic. Through an accumulation of knowledge, we have identified the optimal approaches to conceptualizing and measuring cohesion, and by assessing this knowledge across contexts, we redirect thinking toward potential shifts in conceptualization and measurement in response to changes taking place in the modern team. In combination, this review synthesizes knowledge, spurs new theory, and provides a solid foundation for future research and practice (see Table 12 for a summary of all findings).

Table 12. Summary of findings.

Overall cohesion-performance relationship (.29)					
Measurement features as moderators			Modern characteristics as moderators		
Task (.33) vs. Social (.25) vs. Group Pride (.34)	✓ *		Face-to-Face (.29) vs. Hybrid (.27) vs. Fully Virtual (.36)	n/a	
Multidimensional (.28) vs. Unidimensional	x		Intact (.32) vs. Short Term (.27) vs. Ad Hoc (.20)	n/a	↓
Referent Shift (.31) vs. Direct Consensus (.20)	✓		Multiple Team Membership, No (.28) vs. Yes (.32)	n/a	
Attitudinally-Focused (.26) vs. Behaviorally-Focused (.34)	✓		Leadership, Hierarchical (.31) vs. Shared (.25)	n/a	↓
			Clearly Defined Roles—Yes (.33) vs. No (.24)	n/a	↓
			Behavioral Interdependence, High (.33) vs. Low (.26)	n/a	↓
			Multiple Stakeholders, No (.24) vs. Yes (.34)	n/a	↑
THREE-WAY INTERACTIONS: MEASUREMENT FEATURES x MODERN CHARACTERISTICS					
TASK COHESION			*SOCIAL COHESION*		
Face-to-Face (.30) vs. Hybrid (.32)	x		Face-to-Face (.24) vs. Hybrid (.26) vs. Fully Virtual (.31)	x	
Intact (.39) vs. Short Term (.32) vs. Ad Hoc (.19)	!	↓	Intact (.29) vs. Short Term (.25) vs. Ad Hoc (.15)	✓	↓
Multiple Team Membership, No (.31) vs. Yes (.37)	x		Multiple Team Membership, No (.24) vs. Yes (.33)	!	↑
Leadership, Hierarchical (.40) vs. Shared (.24)	!	↓	Leadership, Hierarchical (.27) vs. Shared (.23)	x	
Clearly Defined Roles, Yes (.35) vs. No (.28)	x		Clearly Defined Roles, Yes (.29) vs. No (.21)	✓	↓
GROUP PRIDE					
Face-to-Face (.30) vs. Hybrid (.37)	x				
Intact (.33) vs. Short Term (.39)	x				
Multiple Team Membership, No vs. Yes	-				
Leadership, Hierarchical (.37) vs. Shared (.32)	x				
Clearly Defined Roles, Yes (.36) vs. No (.30)	x				

(continued)

Table 12. (continued)

THREE-WAY INTERACTIONS: MEASUREMENT FEATURES x MODERN CHARACTERISTICS									
TASK COHESION			*SOCIAL COHESION*			*GROUP PRIDE*		
Behavioral Interdependence, High (.27) vs. Low (.30)	x		Behavioral Interdependence, High (.32) vs. Low (.21)	✓	↓	Behavioral Interdependence, High (.31) vs. Low (.36)	x	
Multiple Stakeholders, No (.25) vs. Yes (.40)	✓	↑	Multiple Stakeholders, No (.21) vs. Yes (.32)	!	↑	Multiple Stakeholders, No (.31) vs. Yes (.37)	x	
DIRECT CONSENSUS			*REFERENT SHIFT*					
Face-to-Face (.17) vs. Hybrid (.19) vs. Fully Virtual (.39)	✓	↑	Face-to-Face (.31) vs. Hybrid (.30) vs. Fully Virtual (.36)	x				
Intact (.29) vs. Short Term (.05) vs. Ad Hoc (.16)	!	↓	Intact (.30) vs. Short Term (.38) vs. Ad Hoc (.18)	!	?			
Multiple Team Membership, No vs. Yes	-		Multiple Team Membership, No (.29) vs. Yes (.37)	!	↑			
Leadership, Hierarchical (.26) vs. Shared (.14)	!	↓	Leadership, Hierarchical (.29) vs. Shared (.33)	x				
Clearly Defined Roles, Yes (.28) vs. No (.10)	!	↓	Clearly Defined Roles, Yes (.33) vs. No (.29)	x				
Behavioral Interdependence, High (.32) vs. Low (.14)	!	↓	Behavioral Interdependence, High (.37) vs. Low (.28)	!	↓			
Multiple Stakeholders, No (.14) vs. Yes (.30)	✓	↑	Multiple Stakeholders, No (.28) vs. Yes (.33)	x				
ATTITUDINALLY-FOCUSED			*BEHAVIORALLY-FOCUSED*					
Face-to-Face (.27) vs. Hybrid (.23) vs. Fully Virtual (.36)	!	↑	Face-to-Face (.33) vs. Hybrid (.32)	x				
Intact (.27) vs. Short Term (.26) vs. Ad Hoc (.23)	x		Intact (.33) vs. Short Term (.37) vs. Ad Hoc (.25)	x				
Multiple Team Membership, No (.24) vs. Yes (.38)	!	↑	Multiple Team Membership, No (.33) vs. Yes (.39)	x				
Leadership, Hierarchical (.25) vs. Shared (.26)	x		Leadership, Hierarchical (.33) vs. Shared (.35)	x				
Clearly Defined Roles, Yes (.31) vs. No (.20)	✓	↓	Clearly Defined Roles, Yes (.32) vs. No (.36)	x				
Behavioral Interdependence, High (.37) vs. Low (.19)	✓	↓	Behavioral Interdependence, High (.39) vs. Low (.32)	x				
Multiple Stakeholders, No (.22) vs. Yes (.32)	!	↑	Multiple Stakeholders, No (.31) vs. Yes (.34)	x				

Note. Highlighted boxes=significant difference; x=no effect and/or hypothesis not supported; ✓ = finding in support of hypothesis; ! = finding opposite of hypothesis;? = finding neither in support or opposite hypothesis; ↑ = the relationship is stronger when the team is more modern; ↓= the relationship is weaker when the team is more modern; *= partial support; - = insufficient data available to test.

Limitations

This study should be interpreted while giving consideration to its limitations, First, we note the correlational nature of meta-analysis that precludes conclusions about the temporal nature of the cohesion-performance relationship. Our primary goal was to provide information that can enhance predictive validity, but we recognize many studies we analyzed utilized cross-sectional designs. However, recent work shows the cohesion-performance relationship is stronger than the reverse (Mathieu et al., 2015); this, paired with representation of experimental and cross-lagged designs in our analyses, we feel confident results have potential to enhance the predictive validity of cohesion metrics. Further, our analyses were constrained by the amount of information presented in each primary study. Although we included 195 independent samples, in many instances our moderator analyses included much smaller numbers due to study elements not being fully described, which prevented us from coding into certain categories (e.g., no inclusion of sample items).

We also acknowledge many of our coding categories were not "pure." As noted, when we determined measures *primarily* (i.e., 75% or more) fit into a coding category, we coded accordingly. This means we allowed for a degree of contamination to enter moderator analyses. However, because the literature is characterized by great contamination and inconsistency, for instance where measures capture multiple dimensions or levels that cannot be disentangled, we argue our approach is currently necessary. If we had required measures to match 100% with coding categories, a large majority of measures would have to be classified as "mixed," severely limiting the ability to examine moderating effects. We therefore believe that despite a degree of contamination, our approach is valuable in that it allows for initial conclusions to be drawn that can then form the foundation for the future examination of metrics that are more pure in nature.

Finally, it is important to recognize that our conclusions are limited to the cohesion-performance relationship, and do not necessarily apply to other team outcomes such as viability or satisfaction. For example, although social cohesion was less predictive of performance compared to task cohesion, it may be more relevant when outcomes more social in nature are the criteria of interest. We believe this is a ripe avenue for future research. Because the link has been well established, we argue the cohesion-performance relationship was optimal for our broader goal of evaluating the predictive validity of varying measurement approaches.

Conclusions

This study greatly advanced cohesion research and provided important insights for practice by determining how the cohesion-performance relationship is influenced by varying approaches to cohesion conceptualization and measurement, as well as key changes taking place within modern teams.

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: This work was partially supported by the U.S. Army Research Institute (ARI) for the Behavioral and Social Sciences and was accomplished under Cooperative Agreement Number W911NF-19-2-0173. This work was also partially supported by the National Aeronautics and Space Administration (NASA) Grant NNX16AP96G to Rice University, as well as NASA Grant NNX17AB55G to Rice University via Johns Hopkins University (Michael Rosen, P.I.).

ORCID iD


Rebecca Grossman https://orcid.org/0000-0002-4943-1069

Note

1. Although earlier work (Beal et al., 2003; Mullen & Copper, 1994) used the terms task commitment and interpersonal attraction to describe cohesion dimensions, later meta-analyses (Castaño et al., 2013; Chiocchio & Essiembre, 2009) adopted the terms task cohesion and social cohesion, respectively. For the sake of simplicity and to reflect common terminology in the current literature, we use the terms task cohesion and social cohesion throughout the remainder of this paper.

References

References marked with an asterisk indicate studies included in the meta-analyses.

*Acuña, S. T., Gómez, M., & Juristo, N. (2009). How do personality, team processes and task characteristics relate to job satisfaction and software quality? *Information & Software Technology*, *51*(*3*), 627–639.

Aguinis, H., Pierce, C. A., Bosco, F. A., Dalton, D. R., & Dalton, C. M. (2011). Debunking myths and urban legends about meta-analysis. *Organizational Research Methods*, *14*(*2*), 306–331.

Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, *50*(*2*), 179–211.

Ajzen, I., & Fishbein, M. (1977). Attitude-behavior relations: A theoretical analysis and review of empirical literature. *Psychological Bulletin*, *84*, 888–918.

*Anderson, S. W., Hesford, J. W., & Young, S. M. (2002). Factors influencing the performance of activity based costing teams: A field study of ABC model development time in the automobile industry. *Accounting, Organizations & Society*, *27*(*3*), 195–211.

*Arroyo, D. G. (1997). *Cohesion, performance, and satisfaction in the co-acting sport of collegiate wrestling*. Dissertation Abstracts International Section A: Humanities and Social Sciences. University of Connecticut.

*Bailey, E. J. (2007). Playing the culture game: Organizational culture in collegiate athletics. *Dissertation Abstracts International: Section B: The Sciences and Engineering*, *68*(*3–B*), 1969.

*Bakeman, R., & Helmreich, R. (1975). Cohesiveness and performance: Covariation and causality in an undersea environment. *Journal of Experimental Social Psychology*, *11*(*5*), 478–489.

Bass, B. M., Avolio, B. J., Jung, D. I., & Berson, Y. (2003). Predicting unit performance by assessing transformational and transactional leadership. *Journal of Applied Psychology*, *88*(*2*), 207–218.

*Ball, J. R., & Carron, A. V. (1976). The influence of team cohesion and participation motivation upon performance success in intercollegiate ice hockey. *Canadian Journal of Applied Sport Sciences*, *1*, 271–275.

Balthazard, P. A., Waldman, D. A., & Atwater, L. E. (2008). The mediating effects of leadership and interaction style in face-to-face and virtual teams. In S. P. Weisband (Ed.), *Leadership at a distance: Research in technologically-supported work* (pp. 127–150). Lawrence Erlbaum Associates Publishers.

*Barrick, M. R., Bradley, B. H., Kristof-Brown, A. L., & Colbert, A. E. (2007). The moderating role of top management team interdependence: Implications for real teams and working groups. *Academy of Management Journal*, *50*(*3*), 544–557.

Barrick, M. R., & Mount, M. K. (2005). Yes, personality matters: Moving on to more important matters. *Human Performance*, *18*, 359–372.

*Barrick, M. R., Stewart, G. L., Neubert, M. J., & Mount, M. K. (1998). Relating member ability and personality to work-team processes and team effectiveness. *Journal of Applied Psychology*, *83*(*3*), 377–391.

Beal, D. J., Cohen, R. R., Burke, M. J., & McLendon, C. L. (2003). Cohesion and performance in groups: A meta-analytic clarification of construct relations. *Journal of Applied Psychology*, *88*(*6*), 989–1004.

Benishek, L. E., & Lazzara, E. H. (2019). Teams in a new era: Some considerations and implications. *Frontiers in Psychology*, *10*, 1006.

Bernerth, J. B., & Aguinis, H. (2016). A critical review and best-practice recommendations for control variable usage. *Personnel Psychology*, *69*(*1*), 229–283.

*Bird, A. M. (1977). Team structure and success as related to cohesiveness and leadership. *Journal of Social Psychology*, *103*, 217–223.

*Blades, J. W. (1986). *Rules for leadership: Improving unit performance*. National Defense University Press.

Bollen, K. A., & Hoyle, R. H. (1990). Perceived cohesion: A conceptual and empirical examination. *Social Forces*, *69*(*2*), 479–504.

*Bradley, B. H., Baur, J. E., Banford, C. G., & Postlethwaite, B. E. (2013). Team players and collective performance: How agreeableness affects team performance over time. *Small Group Research*, *44*(*6*), 680–711.

*Brahm, T., & Kunze, F. (2012). The role of trust climate in virtual teams. *Journal of Managerial Psychology*, *27*(*6*), 595–614.

*Burchfield, M. A. (1997). *Personality composition as it relates to team performance*. Unpublished doctoral dissertation, Stevens Institute of Technology, Hoboken, New Jersey.

Carless, S. A., & De Paola, C. (2000). The measurement of cohesion in work teams. *Small Group Research*, *31*(*1*), 71–88.

Crawford, E. R. (2014). Team network multiplexity, synergy, and performance. *Dissertation Abstracts International Section A: Humanities and Social Sciences*, *75*(6–A(E)).

*Carron, A. V., & Ball, J. R. (1977). An analysis of the cause–effect characteristics of cohesiveness and participation motivation in intercollegiate hockey. *International Review of Sport Sociology*, *12*, 49–60.

Carron, A. V., & Brawley, L. R. (2000). Cohesion: Conceptual and measurement issues. *Small Group Research*, *31*(*1*), 89–106.

Carron, A. V., Colman, M. M., Wheeler, J., & Stevens, D. (2002). Cohesion and performance in sport: A meta-analysis. *Journal of Sport and Exercise Psychology*, *24*, 168–188.

Carron, A. V., Widmeyer, W. N., & Brawley, L. R. (1985). The development of an instrument to assess cohesion in sport teams: The group environment questionnaire. *Journal of Sport Psychology*, *7*, 244–266.

Carter, N. T., Carter, D. R., & DeChurch, L. A. (2015). Implications of observability for the theory and measurement of emergent team phenomena. *Journal of Management*, *44*(*4*), 1398–1425.

Casey-Campbell, M., & Martens, M. L. (2009). Sticking it all together: A critical assessment of the group cohesion-performance literature. *International Journal of Management Reviews*, *11*(*2*), 223–246.

Castaño, N., Watts, T., & Tekleab, A. G. (2013). A reexamination of the cohesion–performance relationship meta-analyses: A comprehensive approach. *Group Dynamics: Theory, Research, and Practice*, *17*(*4*), 207–231.

Chan, D. (1998). Functional relations among constructs in the same content domain at different levels of analysis: A typology of composition models. *Journal of Applied Psychology*, *83*(*2*), 234–246.

*Chang, A., & Bordia, P. (2001). A multidimensional approach to the group cohesion-group performance relationship. *Small Group Research*, *32*(*4*), 379–405.

*Chen, X.-P., Lam, S. S. K., Naumann, S. E., & Schaubroeck, J. (2005). Group citizenship behaviour: Conceptualization and preliminary tests of its antecedents and consequences. *Management and Organization Review*, *1*(*2*), 273–300.

Chiocchio, F., & Essiembre, H. (2009). Cohesion and performance A meta-analytic review of disparities between project teams, production teams, and service teams. *Small Group Research*, *40*(*4*), 382–420.

*Chou, H.-W., & Yeh, Y.-J. (2007). Conflict, conflict management, and performance in ERP teams. *Social Behavior and Personality*, *35*(*8*), 1035–1048.

*Colarreli, S. M., & Boos, A. L. (1992). Sociometric and ability-based assignment to work groups: Some implications for personnel selection. *Journal of Organizational Behavior*, *13*(*2*), 187–196.

*Cooper, B. L. (2004). *Group norms and performance: A general model of work team performance using Jackson's return potential model of group norms*. Dissertation Abstracts International: Section B: The Sciences and Engineering.

California School of Professional Psychology-San Diego.

Costa, A. C., & Anderson, N. (2011). Measuring trust in teams: Development and validation of a multifaceted measure of formative and reflective indicators of team trust. *European Journal of Work and Organizational Psychology*, *20*(*1*), 119–154.

*Cotter, L. L. (1979). *Group cohesiveness and team success among women's intercollegiate basketball teams*. Unpublished doctoral dissertation, Indiana University, Bloomington.

Coultas, C. W., Driskell, T., Burke, C. S., & Salas, E. (2014). A conceptual review of emergent state measurement: Current problems, future solutions. *Small Group Research*, *45*(*6*), 671–703.

*Coyne, I., Craig, J., & Chong, P. S.-L. (2004). Workplace bullying in a group context. *British Journal of Guidance & Counseling*, *32*(*3*), 301–317.

Crisp, C. B., & Jarvenpaa, S. L. (2013). Swift trust in global virtual teams: Trusting beliefs and normative actions. *Journal of Personnel Psychology*, *12*(*1*), 45–56.

Cronin, M. A., & George, E. (2020). The why and how of the integrative review. *Organizational Research Methods*, 1–24.

*Curtis, A. B. (2004). *The impact of task type on the relationship between group constructs and performance*. Dissertation Abstracts International: Section B: The Sciences and Engineering. Saint Louis University.

Daft, R. L., & Lengel, R. H. (1986). Organizational information requirements, media richness and structural design. *Management Science*, *32*(*5*), 554–571.

*Dailey, R. C. (1978). Perceived group variables as moderators of the task characteristics-individual performance relationship. *Journal of Management*, *4*(*2*), 69–80.

*Dailey, R. C. (1980). A path analysis of R&D team coordination and performance. *Decision Sciences*, *11*(*2*), 357–369.

*Dayan, M., & Di Benedetto, A. (2008). Procedural and interactional-justice perceptions and teamwork quality. *Journal of Business & Industrial Marketing*, *23*(*7/8*), 566–576.

*de Jong, J. P., Curşeu, P. L., & Leenders, R. T. A. (2014). When do bad apples not spoil the barrel? Negative relationships in teams, team performance, and buffering mechanisms. *Journal of Applied Psychology*, *99*(*3*), 514.

DeChurch, L. A., & Mesmer-Magnus, J. R. (2010). The cognitive underpinnings of effective teamwork: A meta-analysis. *Journal of Applied Psychology*, *95*(*2*), 32–53.

*Deep, S. D., Bass, B. M., & Vaughan, J. A. (1967). Some effects on business gaming of previous quasi-T group affiliations. *Journal of Applied Psychology*, *51*, 426–431.

Dion, K. L. (2000). Group cohesion: From "field of forces" to multidimensional construct. *Group Dynamics: Theory, Research, and Practice*, *4*(*1*), 7–26.

Dobbins, G. H., & Zaccaro, S. J. (1986). The effects of group cohesion and leader behavior on subordinate satisfaction. *Group & Organization Management*, *11*(*3*), 203–219.

*Druskat, V. U. (1995). *A team competency study of self-managed manufacturing teams*. Dissertation Abstracts International: Section B: The Sciences and Engineering. Boston University.

*Dusig, M. S. (2000). *Enhancing team confidence: Collective efficacy as a mediator of the relationship between team leadership style and team outcomes* (Doctoral dissertation). Retrieved from *Dissertations and Theses database*. (UMI No. 9968846).

Duval, S., & Tweedie, R. (2000). Trim and fill: A simple funnel-plot–based method of testing and adjusting for publication bias in meta-analysis. *Biometrics*, *56*(*2*), 455–463.

*Eisenberg, J. (2001). *The effects of reward schemes, individualism-collectivism, and intrinsic motivation on teams' creative performance*. Dissertation Abstracts International: Section B: The Sciences and Engineering. Colorado State University.

*Elron, E. (1997). Top management teams within multinational corporations: Effects of cultural heterogeneity. *Leadership Quarterly*, *8*(*4*), 393.

*Ensley, M. D., & Hmieleski, K. M. (2005). A comparative study of new venture top management team composition, dynamics and performance between university-based and independent start-ups. *Research Policy*, *34*(*7*), 1091–1105.

*Ensley, M. D., Pearson, A. W., & Amason, A. C. (2002). Understanding the dynamics of new venture top management teams Cohesion, conflict, and new venture performance. *Journal of Business Venturing*, *17*(*4*), 365.

*Ensley, M. D., Pearson, A. W., & Sardeshmukh, S. R. (2007). The negative consequences of pay dispersion in family and non-family top management teams: an exploratory analysis of new venture, high-growth firms. *Journal of Business Research*, *60*(*10*), 1039–1047.

*Erdheim, J. (2007). *Positive and negative affect: How do they impact Hackman's (1987) model of group effectiveness*. Dissertation Abstracts International: Section B: The Sciences and Engineering. Bowling Green State University.

*Espinosa, J. A., & Clark, M. A. (2014). Team knowledge representation a network perspective. *Human Factors: The Journal of the Human Factors and Ergonomics Society*, *56*(*2*), 333–348.

Evans, C. R., & Dion, K. L. (1991). Group cohesion and performance: A meta-analysis. *Small Group Research*, *22*(*2*), 175–186.

*Fandt, P. M. (1991). The relationship of accountability and interdependent behavior to enhancing team consequences. *Group & Organization Management*, *16*, 300–312.

Farrar, T. D. (2010). The correlation between leadership behaviors, cohesiveness, and team building in women's community college volleyball. *Dissertation Abstracts International: Section B: The Sciences and Engineering*, *71*(*1–B*), 645.

Feitosa, J., Grossman, R., Kramer, W.S., & Salas, E. (2020). Measuring team trust: A critical and meta-analytical review. *Journal of Organizational Behavior*. https://doi.org/10.1002/job.2436

Fiedler, F. E. (1967). *A theory of leadership effectiveness*. McGraw-Hill.

Field, A. P., & Gillett, R. (2010). How to do a meta-analysis. *British Journal of Mathematical and Statistical Psychology*, *63*(*3*), 665–694.

Fisher, G., & Aguinis, H. (2017). Using theory elaboration to make theoretical advancements. *Organizational Research Methods*, *20*(*3*), 438–464.

*Fodor, E. M., & Smith, T. (1982). The power motive as an influence on group decision making. *Journal of Personality and Social Psychology*, *42*(*1*), 178–185.

*Fullagar, C. J., & Egleston, D. O. (2008). Norming and performing: Using microworlds to understand the relationship between team cohesiveness and performance. *Journal of Applied Social Psychology*, *38*(*10*), 2574–2593.

*Gekoski, N. (1952). Predicting group productivity. *Personnel Psychology*, *5*, 281–292.

*George, J. A. (1999). The impact of team leader behavior on team effectiveness: A leader-member exchange theoretic perspective. *Dissertation Abstracts International: Section B: The Sciences and Engineering*, *59*(*9–B*), 5147.

*George, J. M., & Bettenhausen, K. (1990). Understanding prosocial behavior, sales performance, and turnover: A group-level analysis in a service context. *Journal of Applied Psychology*, *75*(*6*), 698–709.

*González, M. G., Burke, M. J., Santuzzi, A. M., & Bradley, J. C. (2003). The impact of group process variables on the effectiveness of distance collaboration groups. *Computers in Human Behavior*, *19*(*5*), 629–648.

Gonzalez-Mulé, E. S., Cockburn, B. W., McCormick, B., & Zhao, P. (2019). Team tenure and team performance: A meta-analysis and process model. *Personnel Psychology*, *73*(*1*), 151–198.

*Graebner, R. I. (2012). *The effects of communication media and team composition in virtual and face-to-face teams*. Dissertation Abstracts International Section A: Humanities and Social Sciences. The George Washington University.

*Greene, C. N. (1989). Cohesion and productivity in work groups. *Small Group Behavior*, *20*, 70–86.

*Grieve, F. G., Whelan, J. P., & Meyers, A. W. (2000). An experimental examination of the cohesion–performance relationship in an interactive team sport. *Journal of Applied Sport Psychology*, *12*, 219–235.

*Griffith, J. (1997). Test of a model incorporating stress, strain, and disintegration in the cohesion-performance relations. *Journal of Applied Social Psychology*, *27*(*17*), 1489–1526.

Grossman, R., Rosch, Z., Mazer, D., & Salas, E. (2015). What matters for team cohesion measurement? A synthesis. In E. Salas, W. B. Vessey, & A. X. Estrada (Eds.), *Team Cohesion: Advances in Psychological Theory, Methods and Practice* (pp. 147–180). Emerald Group Publishing Limited.

*Guchait, P., Hamilton, K., & Hua, N. (2014a). Personality predictors of team taskwork understanding and transactive memory systems in service management teams. *International Journal of Contemporary Hospitality Management*, *26*(*3*), 401–425.

*Guchait, P., Tews, M. J., & Simons, T. (2014b). The influence of transactive memory systems and psychological safety on effectiveness of service management teams in a restaurant setting. *Journal of Human Resources in Hospitality & Tourism*, *13*(*3*), 234–252.

Guion, R. M. (2011). *Assessment, measurement, and prediction for personnel decisions* (2nd ed.). Routledge.

Gully, S. M., Devine, D. J., & Whitney, D. J. (1995). A meta-analysis of cohesion and performance effects of level of analysis and task interdependence. *Small Group Research*, *26*(*4*), 497–520.

*Gupta, V. K., Huang, R., & Niranjan, S. (2010). A longitudinal examination of the relationship between team leadership and performance. *Journal of Leadership & Organizational Studies*, *17*(*4*), 335–350.

Hackman, J. R. (1987). The design of work teams. In J. Lorsch (Ed.), *Handbook of organizational behavior* (pp. 315–342). Prentice-Hall.

*Halfhill, T. R. (2001). Personality composition, group norms, and group effectiveness in military work teams. *Dissertation Abstracts International: Section B: The Sciences and Engineering*, *61*(*9–B*), 5037.

*Hambley, L. A. (2006). Virtual team leadership: The effects of leadership style and communication medium on team interaction styles and outcomes. *Dissertation Abstracts International: Section B: The Sciences and Engineering*.

*Hambley, L. A., O'Neill, T. A., & Kline, T. J. B. (2007). Virtual team leadership: The effects of leadership style and communication medium on team interaction styles and outcomes. *Organizational Behavior & Human Decision Processes*, *103*(*1*), 1–20.

Harrison, D. A., Newman, D. A., & Roth, P. L. (2006). How important are job attitudes? Meta-analytic comparisons of integrative behavioral outcomes and time sequences. *Academy of Management Journal*, *49*(*2*), 305–325.

*Hasan, B., & Ali, J. (2007). An empirical examination of factors affecting group effectiveness in information systems projects. *Decision Sciences Journal of Innovative Education*, *5*(*2*), 229–243.

*Hausknecht, J. P., Trevor, C. O., & Howard, M. J. (2009). Unit-level voluntary turnover rates and customer service quality: Implications of group cohesiveness, newcomer concentration, and size. *Journal of Applied Psychology*, *94*(*4*), 1068–1075.

*Haythorn, W. (1953). The influence of individual members on the characteristics of small groups. *The Journal of Abnormal and Social Psychology*, *48*(*2*), 276–284.

Hedges, L. V., & Vevea, J. L. (1998). Fixed-and random-effects models in meta-analysis. *Psychological Methods*, *3*(*4*), 486–504.

Higgins, J. P., Thompson, S. G., Deeks, J. J., & Altman, D. G. (2003). Measuring inconsistency in meta-analyses. *British Medical Journal*, *327*(*7414*), 557–560.

*Higgins, K. D. (2002). *How organizational citizenship behavior influences group effectiveness* (Doctoral dissertation). Retrieved from *Dissertations and Theses database* (UMI No. 3055445).

*Hirschfeld, R. R., & Bernerth, J. B. (2008). Mental efficacy and physical efficacy at the team level: Inputs and outcomes among newly formed action

teams. *Journal of Applied Psychology*, *93*(*6*), 1429–1437.

*Hirschfeld, R. R., Jordan, M. H., Feild, H. S., Giles, W. F., & Armenakis, A. A. (2005). Teams' female representation and perceived potency as inputs to team outcomes in a predominantly male field setting. *Personnel Psychology*, *58*(*4*), 893–924.

*Hoegl, M., & Gemuenden, H. G. (2001). Teamwork quality and the success of innovative projects: A theoretical concept and empirical evidence. *Organization Science*, *12*(*4*), 435–449.

*Hoogstraten, J., & Vorst, H. C. M. (1978). Group cohesion, task performance, and the experimenter expectancy effect. *Human Relations*, *31*(*11*), 939.

*Hoyt, C. L., & Blascovich, J. (2003). Transformational and transactional leadership in virtual and physical environments. *Small Group Research*, *34*(*6*), 678–715.

*Hu, J. (2012). *A team-level social exchange model: The antecedents and consequences of leader-team exchange*. Dissertation Abstracts International Section A: Humanities and Social Sciences. University of Illinois at Chicago.

*Hunger, J. D., & Wheelen, T. L. (1975, August). The relationship between group dynamics and team performance in business stimulation games. *Academy of Management Proceedings*, *1975*(*1*), 43–45.

Hunter, J. E., & Schmidt, F. L. (2004). *Methods of meta-analysis: Correcting error and bias in research findings* (2nd ed.). SAGE.

*Im, S., Montoya, M. M., & Workman, J. P. (2013). Antecedents and consequences of creativity in product innovation teams antecedents and consequences of creativity in product innovation teams. *Journal of Product Innovation Management*, *30*(*1*), 170–185.

*Jarvenpaa, S. L., Shaw, T. R., & Staples, D. S. (2004). Toward contextualized theories of trust: The role of trust in global virtual teams. *Information Systems Research*, *15*(*3*), 250–264.

*Jaussi, K. S., & Dionne, S. D. (2003). Leading for creativity: The role of unconventional leader behavior. *The Leadership Quarterly*, *14*(*4–5*), 475–498.

*Jehn, K. A., & Shah, P. P. (1997). Interpersonal relationships and task performance: An examination of mediation processes in friendship and acquaintance groups. *Journal of Personality and Social Psychology*, *72*, 775–790.

*Johnson, A. L. (1998). *Team cohesion and its relationship to performance success in the Cape Cod Baseball League*. Dissertation Abstracts International Section A: Humanities and Social Sciences. The Florida State University.

*Jordan, M. H., Feild, H. S., & Armenakis, A. A. (2002). The relationship of group process variables and team performance: A team-level analysis in a field setting. *Small Group Research*, *33*(*1*), 121.

*Jung, D. I., & Sosik, J. J. (2002). Transformational leadership in work groups: The role of empowerment, cohesiveness, and collective-efficacy on perceived group performance. *Small Group Research*, *33*(*3*), 313–336.

*Kahai, S. S., Huang, R., & Jestice, R. J. (2012). Interaction effect of leadership and communication media on feedback positivity in virtual teams. *Group & Organization Management*, *37*(*6*), 716–751.

*Kane, T. D. (1996). Integrating functional leadership and social cognitive theory: The leader's regulation of groups. *Dissertation Abstracts International: Section B: The Sciences and Engineering*, *57*(*3–B*), 2198.

Kazdin, A. E. (2003). *Research design in clinical psychology*. Allyn & Bacon.

*Keller, R. T. (1986). Predictors of the performance of project groups in R & D organizations. *Academy of Management Journal*, *29*(*4*), 715–726.

*Keller, R. T. (2001). Cross-functional project groups in research and new product development: Diversity, communications, job stress, and outcomes. *Academy of Management Journal*, *44*(*3*), 547–559.

*Kickul, G. H. (2000). Antecedents of self-managed work team performance in a computerized

business simulation: Personality and group interaction. *Dissertation Abstracts International Section A: Humanities and Social Sciences*, *61*(*6–A*), 2270.

Kirkman, B. L., Tesluk, P. E., & Rosen, B. (2001). Assessing the incremental validity of team consensus ratings over aggregation of individual-level data in predicting team effectiveness. *Personnel Psychology*, *54*(*3*), 645–667.

*Klein, H. J., & Mulvey, P. W. (1995). Two investigations of the relationships among group goals, goal commitment, cohesion, and performance. *Organizational Behavior & Human Decision Processes*, *61*(*1*), 44–53.

Klein, K. J., Conn, A. L., Smith, D. B., & Sorra, J. S. (2001). Is everyone in agreement? An exploration of within-group agreement in employee perceptions of the work environment. *Journal of Applied Psychology*, *86*, 3–16.

*Ko, J. (2005). Impact of leadership and team members' individualism-collectivism on team processes and outcomes: A leader-member exchange perspective. *Dissertation Abstracts International Section A: Humanities and Social Sciences*, *66*(*6–A*), 2290.

Kozlowski, S. W., & Ilgen, D. R. (2006). Enhancing the effectiveness of work groups and teams. *Psychological Science in the Public Interest*, *7*(*3*), 77–124.

*Kristof-Brown, A. L., Seong, J. Y., Degeest, D. S., Park, W. W., & Hong, D. S. (2014). Collective fit perceptions: A multilevel investigation of person–group fit with individual-level and team-level outcomes. *Journal of Organizational Behavior*, *35*(*7*), 969–989.

*Landers, D. M., Wilkinson, M. O., Hatfield, B. D., & Barber, H. (1982). Causality and the cohesion–performance relationship. *Journal of Sport Psychology*, *4*(*2*), 170–183.

*Langfred, C. W. (1998). Is group cohesiveness a double-edged sword? An investigation of the effects of cohesiveness on performance. *Small Group Research*, *29*(*1*), 124–143.

*Langfred, C. W. (1998). *The importance of cross-level analysis and contextual contingencies when granting autonomy to groups and individuals in organizations*. Dissertation Abstracts International Section A: Humanities and Social Sciences. Northwestern University.

*Lavy, S., Bareli, Y., & Ein-Dor, T. (2015). The effects of attachment heterogeneity and team cohesion on team functioning. *Small Group Research*, *46*(*1*), 27–49.

Lee, C., & Farh, J. L. (2004). Joint effects of group efficacy and gender diversity on group cohesion and performance. *Applied Psychology*, *53*(*1*), 136–154.

*Lee, C., Tinsley, C. H., & Bobko, P. (2002). An investigation of the antecedents and consequences of group-level confidence. *Journal of Applied Social Psychology*, *32*(*8*), 1628–1652.

*Lee, P. K. C., Cheng, T. C. E., Yeung, A. C. L., & Lai, K. (2011). An empirical study of transformational leadership, team performance and service quality in retail banks. *Omega*, *39*(*6*), 690–701.

*Lent, R. W., Schmidt, J., & Schmidt, L. (2006). Collective efficacy beliefs in student work teams: Relation to self-efficacy, cohesion, and performance. *Journal of Vocational Behavior*, *68*, 73–84.

*Lin, C.-C., & Peng, T.-K. (2010). From organizational citizenship behaviour to team performance: The mediation of group cohesion and collective efficacy. *Management & Organization Review*, *6*(*1*), 55–75.

Lipsey, M. W., & Wilson, D. B. (2001). *Practical meta-analysis* (Vol. 49). Applied social research methods series. SAGE.

*Liu, D., Liu, J., Kwan, H. K., & Mao, Y. (2009a). What can I gain as a mentor? The effect of mentoring on the job performance and social status of mentors in China. *Journal of Occupational and Organizational Psychology*, *82*(*4*), 871–895.

*Liu, J., Fu, P., & Liu, S. (2009b). Conflicts in top management teams and team/firm outcomes: The moderating effects of conflict-handling

approaches. *International Journal of Conflict Management*, *20*, 228–250.

*Lodahl, T. M., & Porter, L. W. (1961). Psychometric score patterns, social characteristics, and productivity of small industrial workgroups. *Journal of Applied Psychology*, *45*, 73–79.

*Lorenz, C. E. (1985). *The influence of expectations and cohesiveness on the performance of small groups: A study of quality circles*. Unpublished doctoral dissertation, North Carolina State University, Raleigh.

*Lowe, T. A. (1994). *The effects of unexpected change in the context of a crisis on work group effectiveness*. Dissertation Abstracts International: Section B: The Sciences and Engineering. New York University.

*MacDonnell, R., O'Neill, T., Kline, T., & Hambley, L. (2009). Bringing group-level personality to the electronic realm: A comparison of face-to-face and virtual contexts. *The Psychologist-Manager Journal*, *12*(*1*), 1–24.

*Mach, M., Dolan, S., & Tzafrir, S. (2010). The differential effect of team members' trust on team performance: The mediation role of team cohesion. *Journal of Occupational and Organizational Psychology*, *83*(*3*), 771–794.

*Man, D. C., & Lam, S. S. K. (2003). The effects of job complexity and autonomy on cohesiveness in collectivistic and individualistic work groups: a cross-cultural analysis. *Journal of Organizational Behavior*, *24*(*8*), 979–1001.

Marlow, S. L., Lacerenza, C. N., Paoletti, J., Burke, C. S., & Salas, E. (2018). Does team communication represent a one-size-fits-all approach?: A meta-analysis of team communication and performance. *Organizational Behavior and Human Decision Processes*, *144*, 145–170.

*Marberry, S. J. (2007). Predicting individual and team performance through personality traits, cohesion, and mental models. *Dissertation Abstracts International: Section B: The Sciences and Engineering*. Northern Illinois University.

*Martens, R., & Peterson, J. A. (1971). Group cohesiveness as a determinant of success and member satisfaction in team performance. *International Review of Sport Sociology*, *6*, 49–59.

Martens, R., Landers, D. M., & Loy, J. W. (1972). Sport cohesiveness questionnaire. Unpublished manuscript. University of Illinois, Champaign.

*Martínez, R. N., & Scott Tindale, R. (2015). Impact of organizational citizenship behavior on performance in women's sport teams. *Journal of Applied Sport Psychology*, *27*(*2*), 200–215.

*Mason, C. M., & Griffin, M. A. (2003). Identifying group task satisfaction at work. *Small Group Research*, *34*, 413–442.

Mathieu, J. E., Hollenbeck, J. R., van Knippenberg, D., & Ilgen, D. R. (2017). A century of work teams in the Journal of Applied Psychology. *Journal of Applied Psychology*, *102*(*3*), 452–467.

Mathieu, J. E., Kukenberger, M. R., D'Innocenzo, L., & Reilly, G. (2015). Modeling reciprocal team cohesion–performance relationships, as impacted by shared leadership and members' competence. *Journal of Applied Psychology*, *100*(*3*), 713–734.

Mathieu, J., Maynard, M. T., Rapp, T., & Gilson, L. (2008). Team effectiveness 1997-2007: A review of recent advancements and a glimpse into the future. *Journal of Management*, *34*(*3*), 410–476.

*May, K. E. (1994). *Understanding the differential effects of demographic- and ability-based diversity on the processes and performance of decision-making teams*. Dissertation Abstracts International: Section B: The Sciences and Engineering. University of California.

Maynard, M. T., Mathieu, J. E., Rapp, T. L., & Gilson, L. L. (2012). Something(s) old and something(s) new: Modeling drivers of global virtual team effectiveness. *Journal of Organizational Behavior*, *33*(*3*), 342–365.

*Mello, A. L., & Delise, L. A. (2015). Cognitive diversity to team outcomes the roles of cohesion and conflict management. *Small Group Research*, *46*(*2*), 204–226.

*Melnick, M. J., & Chemers, M. M. (1974). Effects of group social structure on the success of basketball teams. *Research Quarterly*, *45*(*1*), 1–8.

Mesmer-Magnus, J. R., DeChurch, L. A., Jimenez-Rodriguez, M., Wildman, J., & Shuffler, M. (2011). A meta-analytic investigation of virtuality and information sharing in teams. *Organizational Behavior and Human Decision Processes*, *115*(*2*), 214–225.

*Metts Iv, V. L. (1996). Work team diversity and team effectiveness: A correlational field study. *Dissertation Abstracts International: Section B: The Sciences and Engineering*, *56*(*8–B*), 4623.

*Michalisin, M. D., Karau, S. J., & Tangpong, C. (2004a). The effects of performance and team cohesion on attribution: A longitudinal simulation. *Journal of Business Research*, *57*(*10*), 1108–1115.

*Michalisin, M. D., Karau, S. J., & Tangpong, C. (2007). Leadership's activation of team cohesion as a strategic asset: An empirical simulation. *Journal of Business Strategies*, *24*(*1*), 1.

*Michalisin, M. D., Karau, S. J., & Tanpong, C. (2004b). Top management team cohesion and superior industry returns an empirical study of the resource-based view. *Group & Organization Management*, *29*(*1*), 125–140.

*Moss, M. C. (1998). *Group motivation and performance on tasks of varying cognitive complexity: Effects of collective efficacy and group personality composition* (Doctoral dissertation). Retrieved from *Dissertations and Theses database*. (UMI No. 9836601).

Mudrack, P. E. (1989). Defining group cohesiveness: A legacy of confusion? *Small Group Behavior*, *20*(*1*), 37–49.

Mullen, B., & Copper, C. (1994). The relation between cohesiveness and productivity: An integration. *Psychological Bulletin*, *115*, 210–227.

*Mulvey, P. W., & Klein, H. J. (1998). The impact of perceived loafing and collective efficacy on group goal processes and group performance. *Organizational Behavior & Human Decision Processes*, *74*(*1*), 62–87.

*Naber, A. M., McDonald, J. N., Asenuga, O. A., & Arthur, W. (2015). Team members' interaction anxiety and team-training effectiveness a catastrophic relationship? *Human Factors: The Journal of the Human Factors and Ergonomics Society*, *57*(*1*), 163–176.

*Nakata, C., & Im, S. (2010). Spurring cross-functional integration for higher new product performance: A group effectiveness perspective. *Journal of Product Innovation Management*, *27*(*4*), 554–571.

*Neal, D. J. (1997). Group competitiveness and cohesion in a business simulation. *Simulation & Gaming*, *28*(*4*), 460–476.

*Neubert, M. J. (1999). Too much of a good thing or the more the merrier? Exploring the dispersion and gender composition of informal leadership in manufacturing teams. *Small Group Research*, *30*(*5*), 635–646.

*Ng, K. Y., & Van Dyne, L. (2005). Antecedents and performance consequences of helping behavior in work groups. *Group & Organization Management*, *30*, 514–540.

*Norms, D., & Niebuhr, R. E. (1980). Group variables and gaming success. *Simulation & Games*, *11*, 301–312.

Nunnally, J. C. (1978). *Psychometric theory*. McGrawHill.

O'Reilly, C. A., III, & Caldwell, D. F. (1985). The impact of normative social influence and cohesiveness on task perceptions and attitudes: A social information processing approach. *Journal of Occupational Psychology*, *58*(*3*), 193–206.

O'Reilly, C. A., III, Caldwell, D. F., & Barnett, W. P. (1989). Work group demography, social integration, and turnover. *Administrative Science Quarterly*, 21–37.

*Panzer, F. J. (2003). The influence of gender and ethnic diversity on team effectiveness. *Dissertation Abstracts International: Section B: The Sciences and Engineering*, *64*(*3–B*), 1534.

*Park, H. S., & Shin, S. Y. (2015). The role of the star player in a cohesive group. *Small Group Research*, *46*(*4*), 415–430.

*Paskevich, D. M. (1996). Conceptual and measurement factors of collective efficacy in its relationship to cohesion and performance outcome.

Dissertation Abstracts International: Section B: The Sciences and Engineering.

*Patrick, R. R. (1997). *Teams and conflict management style: The moderating effect of conflict management style on the relationship between the type of conflict and team effectiveness in continuous work teams* (Doctoral dissertation). Retrieved from *Dissertations and Theses database*.

*Phillips, J. I. (1996). *The effect of group resources and individual group processes on the use of minority knowledge and group decision-making outcomes*. Dissertation Abstracts International Section A: Humanities and Social Sciences. New Mexico State University.

Podsakoff, P. M., MacKenzie, S. B., & Fetter, R. (1993). Substitutes for leadership and the management of professionals. *The Leadership Quarterly*, *4*(*1*), 1–44.

Podsakoff, P. M., & MacKenzie, S. B. (1994). An examination of the psychometric properties and nomological validity of some revised and reduced substitutes for leadership scales. *Journal of Applied Psychology*, *79*(*5*), 702–713.

*Podsakoff, P. M., MacKenzie, S. B., & Ahearne, M. (1997). Moderating effects of goal acceptance on the relationship between group cohesiveness and productivity. *Journal of Applied Psychology*, *82*(*6*), 974–983.

*Porter, T. W., & Lilly, B. S. (1996). The effects of conflict, trust, and task commitment on project team performance. *International Journal of Conflict Management*, *7*, 361–376.

Price, J. L., & Mueller, C. W. (1986). *Handbook of Organizational Measurement*. Pitman Publishing.

*Prien, K. O. (2000). *The effects of cooperative learning, cohesion, and commitment on team performance*. Dissertation Abstracts International Section A: Humanities and Social Sciences. University of Memphis.

*Purvanova, R. K. (2009). Linking personality judgment accuracy and the sense of feeling known to team effectiveness in face-to-face and virtual project teams: A longitudinal investigation. *Dissertation Abstracts International: Section B: The Sciences and Engineering*, *70*(*1–B*), 726.

*Putti, J. M. (1985). Leader behavior and group characteristics in work improvement teams: The Asian context. *Public Personnel Management*, *14*(*3*), 301–306.

*Putz, D., Schilling, J., Kluge, A., & Stangenberg, C. (2013). Measuring organizational learning from errors: Development and validation of an integrated model and questionnaire. *Management Learning*, *44*(*5*), 511–536.

*Quigley, N. R., Tekleab, A. G., & Tesluk, P. E. (2007). Comparing consensus-and aggregation-based methods of measuring team-level variables: The role of relationship conflict and conflict management processes. *Organizational Research Methods*, *10*(*4*), 589–608.

*Rapisarda, B. A. (2003). The impact of emotional intelligence on work group cohesiveness and performance. *Dissertation Abstracts International: Section B: The Sciences and Engineering*.

*Rapp, T. L. (2010). *The psychological dynamics underlying individual responses to working in multiple project teams: An intra-person and inter-person investigation*. Dissertation Abstracts International Section A: Humanities and Social Sciences. ProQuest Information & Learning.

*Raver, J. L., & Gelfand, M. J. (2005). Beyond the individual victim: Linking sexual harassment, team processes, and team performance. *Academy of Management Journal*, *48*(*3*), 387–400.

*Rice, R. W., Bender, L. R., & Vitters, A. G. (1980). Leader sex, follower attitudes toward women, and leadership effectiveness: A laboratory experiment. *Organizational Behavior & Human Performance*, *25*, 46–78.

*Rink, F. A., & Ellemers, N. (2009). Temporary versus permanent group membership: How the future prospects of newcomers affect newcomer acceptance and newcomer influence. *Personality and Social Psychology Bulletin*, *35*, 764–775.

*Riolli-Saltzman, L. (1999). Group member explanatory style as a predictor of group performance and turnover intentions in a manufacturing setting.

Dissertation Abstracts International Section A: Humanities and Social Sciences, *59*(*8–A*), 3080.

Rosenfeld, L. B., & Gilbert, J. R. (1989). The measurement of cohesion and its relationship to dimensions of self-disclosure in classroom settings. *Small Group Research*, *20*(*3*), 291–301.

Salas, E., Grossman, R., Hughes, A. M., & Coultas, C. W. (2015). Measuring team cohesion observations from the science. *Human Factors: The Journal of the Human Factors and Ergonomics Society*, *57*(*3*), 365–374.

*Schmidt, J. (2008). Personality, group context, and performance behaviors in university football teams. *Dissertation Abstracts International: Section B: The Sciences and Engineering*, *69*(*4–B*), 2665.

Schultz, K. S., & Whitney, D. J. (2005). *Measurement theory in action*. SAGE.

Seashore, S. E. (1954). *Group cohesiveness in the industrial work group*. University of Michigan, Survey Research Center Institute for Social Research.

Seers, A. (1989). Team-member exchange quality: A new construct for role-making research. *Organizational Behavior and Human Decision Processes*, *43*(*1*), 118–135.

*Seong, J. Y., Kristof-Brown, A. L., Park, W. W., Hong, D. S., & Shin, Y. (2015). Person-group fit diversity antecedents, proximal outcomes, and performance at the group level. *Journal of Management*, *41*(*4*), 1184–1213.

*Shapcott, K. M. (2010). Team attributions in sport. *Dissertation Abstracts International: Section B: The Sciences and Engineering*.

Siebold, G. L. (2006). Military group cohesion. *Military Life: The Psychology of Serving in Peace and Combat*, *1*, 185–201.

*Smith, K. G., Smith, K. A., Olian, J. D., & Sims, H. P. (1994). Top management team demography and process: The role of social integration and communication. *Administrative Science Quarterly*, *39*(*3*), 412–438.

*Stalmeijer, R. E., Gijselaers, W. H., Wolfhagen, I. H. A. P., Harendza, S., & Scherpbier, A. J. J. A. (2007). How interdisciplinary teams can create multi-disciplinary education: The interplay between team processes and educational quality. *Medical Education*, *41*(*11*), 1059–1066.

*Staw, B. M. (1975). Attribution of the "causes" of performance: A general alternative interpretation of cross-sectional research on organizations. *Organizational Behavior and Human Performance*, *13*(*3*), 414–432.

Stewart, G. L., Courtright, S. H., & Barrick, M. R. (2012). Peer-based control in self-managing teams: linking rational and normative Influence with individual and group performance. *Journal of Applied Psychology*, *97*(*2*), 435–447.

*Stewart, G. L., Fulmer, I. S., & Barrick, M. R. (2005). An exploration of member roles as a multilevel linking mechanism for individual traits and team outcomes. *Personnel Psychology*, *58*(*2*), 343–365.

*Stillman, P. E., Gilovich, T., & Fujita, K. (2014). Predicting group outcomes from brief exposures. *Social Cognition*, *32*(*1*), 71.

*Stinson, J. E., & Hellebrandt, E. T. (1972). Group cohesiveness, productivity, and strength of formal leadership. *The Journal of Social Psychology*, *87*(*1*), 99–105.

Stokes, J. P. (1983). Components of group cohesion intermember attraction, instrumental value, and risk taking. *Small Group Research*, *14*(*2*), 163–173.

*Strang, A. J., Funke, G. J., Russell, S. M., Dukes, A. W., & Middendorf, M. S. (2014). Physio-behavioral coupling in a cooperative team task: Contributors and relations. *Journal of Experimental Psychology: Human Perception and Performance*, *40*(*1*), 145.

*Szumal, J. L. (1995). *An examination of the multiple-level effects of gender and race on group problem solving*. Dissertation Abstracts International Section A: Humanities and Social Sciences. University of Illinois at Chicago.

Tannenbaum, S. I., Mathieu, J. E., Salas, E., & Cohen, D. (2012). Teams are changing: Are research and practice evolving fast enough? *Industrial and Organizational Psychology: Perspectives on Science and Practice*, *5*(*1*), 2–24.

*Tekleab, A. G., Quigley, N. R., & Tesluk, P. E. (2009). A longitudinal study of team conflict, conflict management, cohesion, and team effectiveness. *Group & Organization Management*, *34*(*2*), 170–205.

*Terborg, J. R., Castore, C., & DeNinno, J. A. (1976). A longitudinal field investigation of the impact of group composition on group performance and cohesion. *Journal of Personality and Social Psychology*, *34*, 782–790.

*Tesluk, P. E. (1996). *An investigation of work group management of the technological environment: Implications for group performance*. Dissertation Abstracts International: Section B: The Sciences and Engineering. The Pennsylvania State University.

*Tesluk, P. E., & Mathieu, J. E. (1999). Overcoming roadblocks to effectiveness: Incorporating management of performance barriers into models of work group effectiveness. *Journal of Applied Psychology*, *84*, 200–217.

*Tung, H.-L., & Chang, Y.-H. (2011). Effects of empowering leadership on performance in management team: Mediating effects of knowledge sharing and team cohesion. *Journal of Chinese Human Resource Management*, *2*(*1*), 43–60.

*Tziner, A., & Vardi, Y. (1982). Effects of command style and group cohesiveness on the performance effectiveness of self-selected tank crews. *Journal of Applied Psychology*, *67*(*6*), 769–775.

*Tziner, A., & Vardi, Y. (1983). Ability as a moderator between cohesiveness and tank crews performance. *Journal of Occupational Behavior*, *4*, 137–143.

*Vacharkulksemsuk, T. (2013). Stepping toward collective mindsets: An investigation of group-and-leader-based synchrony in work teams. *Dissertation Abstracts International: Section B: The Sciences and Engineering*.

*Vallejo-Martos, M. C. (2011). The organizational culture of family firms as a key factor of competitiveness. *Journal of Business Economics & Management*, *12*(*3*), 451–481.

*Van der Land, S. F., Schouten, A. P., Feldberg, F., Huysman, M., & Van den Hooff, B. (2015). Does avatar appearance matter? How team visual similarity and member–avatar similarity influence virtual team performance. *Human Communication Research*, *41*(*1*), 128–153.

*van Vianen, A. E. M., & De Dreu, C. K. W. (2001). Personality in teams: Its relationship to social cohesion, task cohesion, and team performance. *European Journal of Work and Organizational Psychology*, *10*, 97–120.

*Venkatesh, V., & Windeler, J. B. (2012). Hype or help? A longitudinal field study of virtual world use for team collaboration. *Journal of the Association for Information Systems*, *13*(*10*), 735–771.

Viechtbauer, W., & Cheung, M. W. L. (2010). Outlier and influence diagnostics for meta-analysis. *Research Synthesis Methods*, *1*(*2*), 112–125.

*Villado, A. J., & Arthur, W. Jr. (2013). The comparative effect of subjective and objective after-action reviews on team performance on a complex task. *Journal of Applied Psychology*, *98*(*3*), 514.

Wageman, R., Gardner, H., & Mortensen, M. (2012). The changing ecology of teams: New directions for teams research. *Journal of Organizational Behavior*, *33*(*3*), 301–315.

*Wang, M.-L., Chen, W.-Y., Lin, Y.-Y., & Hsu, B.-F. (2010). Structural characteristics, process, and effectiveness of cross-functional teams in hospitals: Testing the I–P–O model. *Journal of High Technology Management Research*, *21*(*1*), 14–22.

*Webber, S. S. (2008). Blending service provider–client project teams to achieve client trust: Implications for project team trust, cohesion, and performance. *Project Management Journal*, *39*(*2*), 72–81.

*Wei, L.-Q., & Wu, L. (2013). What a diverse top management team means: Testing an integrated model. *Journal of Management Studies*, *50*(*3*), 389–412.

*Wekselberg, V., Goggin, W. C., & Collings, T. J. (1997). A multifaceted concept of group maturity and its measurement and relationship to group performance. *Small Group Research*, *28*(*1*), 3–28.

*Weng, L.-C., Su, C.-W., & Lai, Y.-C. (2011). Superior service performance through transformational leadership: A cross-level study of a large Taiwanese commercial bank. *Asia Pacific Management Review*, *16*(*2*), 181–195.

Whitener, E. M. (1990). Confusion of confidence intervals and credibility intervals on meta-analysis. *Journal of Applied Psychology*, *75*, 315–321.

*Whitney, K. (1994). Improving group task performance: The role of group goals and group efficacy. *Human Performance*, *7*(*1*), 55–78.

*Wilderom, C. P., Hur, Y., Wiersma, U. J., Berg, P. T. V., & Lee, J. (2015). From manager's emotional intelligence to objective store performance: Through store cohesiveness and sales-directed employee behavior. *Journal of Organizational Behavior*, *36*(*6*), 825–844.

Wildman, J. L., Thayer, A. L., Rosen, M. A., Salas, E., Mathieu, J. E., & Rayne, S. R. (2012). Task types and team-level attributes: Synthesis of team classification literature. *Human Resource Development Review*, *11*(*1*), 97–129.

*Williams, E. A., & Castro, S. L. (2010). The effects of teamwork on individual learning and perceptions of team performance: A comparison of face-to-face and online project settings. *Team Performance Management*, *16*(*3/4*), 124–147.

*Williams, J. M., & Hacker, C. M. (1982). Causal relationships among cohesion, satisfaction, and performance in women's intercollegiate field hockey teams. *Journal of Sport Psychology*, *4*, 324–337.

*Woehr, D., Arciniega, L., & Poling, T. (2013). Exploring the effects of value diversity on team effectiveness. *Journal of Business & Psychology*, *28*(*1*), 107–121.

*Wolfe, J., & Box, T. M. (1988). Team cohesion effects on business game performance. *Simulation & Games*, *19*(*1*), 82–98.

*Wolff, S. B. (1998). The role of caring behavior and peer feedback in creating team effectiveness. *Dissertation Abstracts International Section A: Humanities and Social Sciences*, *59*(*3–A*), 0889.

*Wong, S.-S. (2003). Investigating collective learning in teams: The context in which it occurs and the collective knowledge that emerges from it. *Dissertation Abstracts International Section A: Humanities and Social Sciences*, *63*(*9–A*), 3261.

*Wong, S.-S. (2004). Distal and local group learning: Performance trade-offs and tensions. *Organization Science*, *15*(*6*), 645–656.

*Wood, S., Michaelides, G., & Thomson, C. (2013). Successful extreme programming: Fidelity to the methodology or good teamworking? *Information & Software Technology*, *55*(*4*), 660–672.

*Yang, F., & Zhang, L. (2014). An examination of when and how leader political skill influences team performance in China: A cultural value perspective. *Asian Journal of Social Psychology*, *17*(*4*), 286–295.

*Yang, H.-D., Kang, H.-R., & Mason, R. M. (2008). An exploratory study on meta skills in software development teams: antecedent cooperation skills and personality for shared mental models. *European Journal of Information Systems*, *17*(*1*), 47–61.

*Yousofpourfard, H. (2012). Cultural intelligence: A new approach to manage teamwork in culturally diverse teams. *Dissertation Abstracts International Section A: Humanities and Social Sciences*.

*Zaccaro, S. J., & Lowe, C. A. (1988). Cohesiveness and performance on an additive task: Evidence for multidimensionality. *Journal of Social Psychology*, *128*(*4*), 547.

Zaccaro, S. J. (1991). Nonequivalent associations between forms of cohesiveness and group-related outcomes: Evidence for multidimensionality. *The Journal of Social Psychology*, *131*(*3*), 387–399.

*Zakrajsek, R. A., Abildso, C. G., Hurst, J. R., & Watson, J. C. I. I. (2007). The relationships among coaches' and athletes' perceptions of coaching staff cohesion, team cohesion, and performance. *Athletic Insight: The Online Journal of Sport Psychology*, *9*(*3*), 1–14.

Author Biographies

Rebecca Grossman is an Associate Professor of Industrial-Organizational Psychology at Hofstra University. Her research focuses on teams (e.g., emergent states, measurement of team constructs), training (e.g., training

transfer), and complex settings (e.g., multiteam memberships). She has published in various outlets, such as *Journal of Organizational Behavior*, *Human Resource Management Review, Academy of Management Learning & Education*, *Organizational Psychology Review*, and *American Psychologist*. Additionally, she was the recipient of the SIOP W. Joyce & Paul W. Thayer Fellowship in I-O Psychology, as well as the Fred Lewis I/ITSEC Scholarship for her research on teams and training.

Kevin Nolan is an Associate Professor of Psychology at Hofstra University. He earned his B.S in Psychology from Wabash College, M.S. in Industrial-Organizational Psychology from Indiana University—Purdue University Indianapolis, and his Ph.D. in Industrial-Organizational Psychology from Bowling Green State University. Dr. Nolan's scholarly research examines how social identity and personal identity motives influence work-related behavior and has been published in a variety of outlets including: *Journal of Applied Psychology*, *Journal of Occupational and Organizational Psychology*, *Journal of Vocational Behavior*, *Journal of Business and Psychology*, *Personnel Assessment and Decisions*, and *Human Performance.*

Zachary Rosch is a Senior Analyst on the People Data Insights team at JetBlue. He analyzes data to help JetBlue make informed decisions surrounding their Crewmembers across a wide range of topics such as turnover, diversity equity & inclusion, and selection. Prior to JetBlue Zachary attended Hofstra University where he earned a Masters in I/O Psychology, and served as a research assistant on projects related to teams and training.

Currently, **David Mazer** works at an international school in Shanghai, China. He earned his B.A. in Psychology from Brooklyn College, M. S. in Psychology from Long Island University, and his Ph.D. in Applied Organizational Psychology from Hofstra University. Dr. Mazer's previous research examines PTSD, team cohesion, virtual teams and team turnover. He has been published in various outlets including: *Journal of Aggression, Maltreatment, and Trauma and Team Cohesion: Advances in Psychological Theory, Methods and Practice.*

Eduardo Salas is the Allyn R. & Gladys M. Cline Chair Professor and Chair of the Department of Psychological Sciences at Rice University. He is a past president of the Society for Industrial/ Organizational Psychology (SIOP) and the Human Factors & Ergonomics Society (HFES), Fellow of the American Psychological Association (APA), Association for Psychological Science, and HFES. He is also the recipient of the 2012 Society for Human Resource Management Losey Lifetime Achievement Award, the 2012 Joseph E. McGrath Award for Lifetime Achievement for his work on teams and team training, and the 2016 APA Award for Outstanding Lifetime Contributions to Psychology.

Appendix

Summary of coding.

			Moderators													
Study	*N*	*r*	Cohesion measure reliability	Performance measure reliability	Cohesion Type	Item Level	Item Focus	Performance Type 1	Performance Type 2	Virtuality	Team Tenure	Multiple Team Membership	Leadership Structure	Role Clarity	Behavioral Interdependence	Multiple Stakeholders
Acuña et al., 2009	35	0.23	—	—	Mix	—	—	Mix	Effct.	H	ST	N	S	N	H	N
Anderson et al., 2002	18	0.58	0.8	I	S	Mix	A	O	Mix	H	I	Y	S	N	H	Y
Arroyo, 1997	12	0.41	—	I	T	Mix	Mix	O	Effct.	F2F	I	N	H	Y	L	Y
Bailey, 2007	28	0.44	0.91	0.78	Mix	Mix	Mix	B	Effct.	F2F	I	N	H	Y	H	Y
Bakeman & Helmreich, 1975	10	0.65	—	—	S	RS	B	B	Effct.	F2F	ST	Y	S	Y	L	Y
Ball & Carron, 1976	15	0.64	—	I	Mix	RS	B	O	Effct.	F2F	I	N	H	Y	H	Y
Balthazard et al., 2008	89	0.24	0.85	I	Mix	RS	Mix	O	Effic.	H	ST	N	S	N	L	N
Barrick et al., 1998	51	0.27	0.87	0.83	S	RS	B	Mix	Effct.	F2F	I	N	H	Y	L	N
Barrick et al., 2007	94	0.19	0.93	0.84	Mix	Mix	Mix	O	Mix	H	I	N	H	Y	H	Y
Bass et al., 2003	72	0.08	0.95	0.81	T	RS	B	O	Effct.	F2F	I	N	H	Y	H	Y
Bird, 1977	8	0.74	—	I	Mix	RS	A	O	Effct.	F2F	I	N	H	Y	H	Y
Blades, 1986	45	0.08	—	—	Mix	RS	B	Mix	Mix	F2F	I	N	H	Y	L	Y
Bradley et al., 2013	107	0.27	0.73	—	S	Mix	Mix	O	Effct.	H	ST	N	S	N	L	N
Brahm & Kunze, 2012	50	0.63	0.89	0.97	T	RS	B	O	Effct.	V	ST	N	S	N	L	N
Burchfield, 1997	72	0.26	0.82	0.97	S	Mix	Mix	O	Mix	F2F	AH	N	S	Y	H	N
Carron & Ball, 1977	12	0.08	—	I	Mix	Mix	Mix	O	Effct.	F2F	I	N	H	Y	H	Y
Chang & Bordia, 2001	17	0.63	0.9	0.84	Mix	RS	B	Mix	Effct.	H	ST	Y	S	N	L	N
Chen et al., 2005	148	0.3	0.92	0.96	S	DC	A	O	Effct.	H	I	N	H	Y	H	N
Chou & Yeh, 2007	103	0.42	0.94	0.88	GP	RS	A	O	Mix	H	ST	Y	H	Y	L	Y
Colarreli & Boos, 1992	88	0.05	0.85	0.73	S	Mix	Mix	O	Effct.	F2F	ST	N	S	N	L	N
Cooper, 2004	104	0.51	0.94	I	Mix	Mix	Mix	O	Effct.	H	I	N	H	Y	_	N
Cotter, 1979	13	0.05	—	I	Mix	Mix	Mix	O	Effct.	F2F	I	N	H	Y	H	Y
Coyne et al., 2004	36	0.07	—	—	S	RS	A	O	Effct.	F2F	I	N	H	Y	H	N
Crawford, 2014	109	0.02	—	—	S	Mix	Mix	O	Effct.	H	ST	Y	S	N	L	N

(continued)

Appendix (continued)

			Moderators													
Study	*N*	*r*	Cohesion measure reliability	Performance measure reliability	Cohesion Type	Item Level	Item Focus	Performance Type 1	Performance Type 2	Virtuality	Team Tenure	Multiple Team Membership	Leadership Structure	Role Clarity	Behavioral Interdependence	Multiple Stakeholders
Curtis, 2004, Sample 1	23	−0.3	—	1	Mix	Mix	Mix	O	Effic.							
Curtis, 2004, Sample 2	21	0.23	—	1	Mix	Mix	Mix	O	Effic.	F2F	AH	N	S	N	L	N
Dailey, 1978	45	0.55	0.98	0.88	Mix	Mix	Mix	O	Effct.	F2F	I	N	H	Y	L	Y
Dailey, 1980	45	0.55	—	—	Mix	DC	A	O	Effct.	F2F	I	N	H	Y	L	Y
Dayan & Di Benedetto, 2008	117	0.19	0.92	0.83	Mix	RS	Mix	O	Effic.	H	I	Y	H	N	L	Y
De Jong et al., 2014	73	0.36	0.84	0.82	T	RS	B	O	Mix	H	I	n/a	H	Y	Mix	Y
Deep et al., 1967	9	−0.42	—	1	Mix	RS	A	O	Mix	F2F	ST	Y	S	N	L	N
Druskat, 1995	22	0.11	0.92	—	S	RS	A	Mix	Effic.	F2F	I	N	H	Y	L	N
Dusig, 2000	50	0.27	0.97	1	T	RS	B	O	Effic.	F2F	AH	N	H	N	L	N
Eisenberg, 2001	48	0.19	0.78	—	Mix	Mix	Mix	Mix	Effct.	F2F	AH	N	S	N	H	N
Elron, 1997	109	0.41	0.77	0.91	Mix	RS	A	B	Mix	F2F	I	N	H	Y	L	Y
Ensley & Hmieleski, 2005	256	0.24	0.91	1	Mix	DC	A	O	Effic.	H	I	N	H	Y	L	Y
Ensley et al., 2002	70	0.17	0.91	1	Mix	DC	A	O	Mix	H	I	N	H	Y	L	Y
Ensley et al., 2007	200	0.09	0.93	1	Mix	DC	A	O	Effct.	H	I	N	H	Y	L	Y
Erdheim, 2007	61	−0.02	0.79	—	Mix	RS	Mix	B	Effic.	F2F	AH	N	S	N	H	N
Espinosa & Clark, 2014	57	0.12	0.86	0.9	GP	DC	A	O	Mix	H	ST	Y	S	N	L	N
Fandt, 1991	115	0.24	0.84	—	S	Mix	Mix	Mix	Mix	F2F	ST	Y	S	N	H	N
Farrar, 2010	25	0.53	—	1	Mix	Mix	Mix	O	Effct.	F2F	I	N	H	Y	H	Y
Fodor & Smith, 1982	40	0.09	1	—	T	RS	—	B	Effct.	F2F	AH	N	H	Y	H	N
Fullagar & Egleston, 2008	10	0.34	0.9	1	Mix	RS	Mix	O	Effct.	V	AH	N	S	Y	H	N
Gekoski, 1952	21	0.1	—	—	T	RS	Mix	O	Effic.	F2F	I	N	H	Y	L	Y
George & Bettenhausen, 1990	33	0.04	0.85	1	S	RS	B	O	Effic.	F2F	I	N	H	Y	L	N
George, 1999	106	0.29	0.79	—	S	RS	B	O	Effct.	F2F	I	N	H	Y	L	N
González et al., 2003	71	0.19	0.94	—	Mix	RS	Mix	Mix	Effct.	V	ST	Y	S	N	L	N
Graebner, 2012	99	0.35	0.94	0.99	S	Mix	A	B	Effic.	H	AH	N	S	N	L	N

(continued)

Appendix (continued)

			Moderators													
Study	*N*	*r*	Cohesion measure reliability	Performance measure reliability	Cohesion Type	Item Level	Item Focus	Performance Type 1	Performance Type 2	Virtuality	Team Tenure	Multiple Team Membership	Leadership Structure	Role Clarity	Behavioral Interdependence	Multiple Stakeholders
Greene, 1989	54	0.18	0.91	—	S	RS	B	O	Mix	F2F	I	N	H	Y	L	Y
Grieve et al., 2000	24	0.17	0.9	I	T	Mix	Mix	O	Effct.	F2F	AH	N	S	Y	H	N
Griffith, 1997	112	0.62	0.92	0.73	Mix	Mix	Mix	B	Effct.	F2F	I	N	H	Y	H	Y
Guchait et al., 2014a, 2014b	27	0.51	0.94	0.82	T	RS	B	Mix	Mix	H	ST	N	S	N	L	N
Gupta et al., 2010	28	0.15	0.66	I	Mix	RS	B	O	Effct.	H	ST	Y	S	N	L	N
Halfhill, 2001	40	0.37	—	—	Mix	RS	A	Mix	Effct.	F2F	I	N	S	Y	H	N
Hambley et al., 2007	60	0.14	0.82	—	S	RS	Mix	O	Effic.	H	AH	N	H	N	L	N
Hasan & Ali, 2007	29	0.54	0.91	0.89	S	RS	B	O	Effct.	H	ST	N	S	N	L	N
Hausknecht et al., 2009	75	0.23	0.82	0.96	Mix	RS	B	B	Mix	F2F	I	N	H	Y	L	Y
Haythorn, 1953	16	0.33	—	I	Mix	RS	—	B	Effic.	F2F	AH	N	S	N	H	N
Higgins, 2002	47	0.14	0.87	0.9	Mix	RS	B	O	Mix	F2F	I	N	H	Y	Mix	Y
Hirschfeld & Bernerth, 2008	110	0.43	0.88	—	S	RS	A	O	Mix	F2F	ST	Y	S	N	H	Y
Hirschfeld et al., 2005	92	0.42	0.82	—	S	RS	A	O	Mix	F2F	ST	Y	S	N	H	Y
Hoegl & Gemuenden, 2001	145	0.37	0.97	0.98	S	RS	A	Mix	Mix	H	I	N	H	Y	H	N
Hoogstraten & Vorst, 1978, Sample 1	8	0.59	I	I	Mix	Manipulation	—	—	Effic.	F2F	AH	N	S	N	L	N
Hoogstraten & Vorst, 1978, Sample 2	8	0.75	I	I	Mix	Manipulation	—	—	Effic.	F2F	AH	N	S	N	L	N
Hoyt & Blascovich, 2003	72	0.1	0.96	I	S	Mix	A	Mix	Effct.	H	AH	N	H	N	L	N
Hu, 2012	67	0.18	0.89	0.74	Mix	Mix	Mix	B	Effct.	H	I	N	H	n/a	Mix	Y
Hunger & Wheelen, 1975	35	0.4	—	I	S	Mix	Mix	O	Effic.	F2F	ST	N	S	N	L	N
Im et al., 2013	206	0.34	0.9	0.97	S	RS	Mix	O	Effct.	H	I	Y	H	N	L	Y
Jarvenpaa et al., 2004	16	0.51	0.92	0.98	Mix	RS	Mix	O	Effct.	V	ST	N	S	N	L	N

(continued)

Appendix (continued)

			Moderators													
Study	*N*	*r*	Cohesion measure reliability	Performance measure reliability	Cohesion Type	Item Level	Item Focus	Performance Type 1	Performance Type 2	Virtuality	Team Tenure	Multiple Team Membership	Leadership Structure	Role Clarity	Behavioral Interdependence	Multiple Stakeholders
Jaussi & Dionne, 2003	79	−0.01	0.77	—	S	RS	B	B	Effct.	F2F	AH	N	H	N	L	N
Jehn & Shah, 1997	53	0.4	0.82	1	T	Mix	A	O	Effic.	F2F	AH	N	S	N	L	N
Johnson, 1998	10	0.82	0.83	1	Mix	Mix	Mix	O	Effct.	F2F	I	N	H	Y	H	Y
Jordan et al., 2002	50	0.52	0.79	—	S	RS	A	B	Mix	F2F	ST	N	S	Y	H	Y
Jung & Sosik, 2002	47	0.41	0.72	0.73	Mix	DC	A	Mix	Effct.	H	I	N	H	Y	H	N
Kahai et al., 2012	34	0.11	0.92	0.8	S	DC	A	B	Effic.	V	AH	N	H	N	H	N
Kane, 1996	80	0.47	0.87	1	T	RS	B	O	Effic.	F2F	AH	N	H	N	L	N
Keller, 1986	30	0.58	0.77	0.94	S	Mix	B	O	Mix	F2F	I	N	H	Y	L	Y
Keller, 2001	93	0.2	0.79	0.89	S	DC	A	O	Mix	H	I	N	n/a	Y	H	N
Kickul, 2000	61	0.1	0.64	1	Mix	Mix	Mix	O	Mix	H	ST	N	S	N	L	N
Klein & Mulvey, 1995, Sample 1	52	0.23	0.87	—	S	Mix	Mix	O	Effct.	F2F	ST	N	S	N	L	N
Klein & Mulvey, 1995, Sample 2	89	0.15	0.88	1	S	Mix	Mix	O	Effic.	F2F	AH	N	S	N	L	N
Ko, 2005	89	0.56	0.88	0.96	S	RS	B	B	Effct.	F2F	I	N	H	Y	H	Y
Kristof-Brown et al., 2014	92	0.29	0.96	0.87	Mix	RS	B	O	Effct.	H	I	N	H	Y	L	Y
Land et al., 2015	80	0.21	0.78	1	S	DC	A	O	Effic.	V	AH	N	S	N	H	N
Landers et al., 1982	10	0.76	—	1	S	RS	A	O	Effct.	F2F	I	N	H	Y	H	N
Langfred, 1998	61	0.41	0.75	0.71	Mix	DC	B	Mix	Mix	F2F	I	N	H	Y	H	Y
Langfred, 1998, Sample 1	67	0.27	0.71	0.77	T	RS	B	O	Effct.	F2F	I	N	H	Y	L	Y
Langfred, 1998, Sample 2	61	0.44	0.9	0.72	T	RS	B	O	Effct.	F2F	I	N	H	Y	H	Y
Langfred, 1998, Sample 3	25	0.31	0.85	0.88	T	RS	B	O	Effct.	F2F	I	N	H	Y	Mix	N
Lavy et al., 2015	40	0.14	0.94	—	T	RS	B	O	Effct.	H	ST	N	S	N	L	N
Lee & Farh, 2004	45	0.43	0.92	1	Mix	RS	Mix	O	Effct.	H	ST	N	S	N	L	N
Lee et al., 2002	27	0.16	0.91	1	Mix	RS	Mix	O	Effct.	H	ST	N	S	N	L	N
Lee et al., 2011	32	0.66	—	—	S	RS	Mix	B	Effct.	F2F	I	N	H	Y	L	Y
Lent et al., 2006	45.5	0.67	0.92	—	S	RS	A	Mix	Mix	H	ST	N	S	N	L	N
Lin & Peng, 2010	62	0.4	0.84	1	S	Mix	A	O	Effct.	H	I	N	H	Y	L	Y
Liu et al., 2009a	62	0.13	0.8	0.73	S	RS	B	B	Effct.	H	I	N	H	Y	L	Y
Liu et al., 2009b	123	0.28	0.78	1	Mix	—	—	O	Effic.	H	I	N	H	Y	H	Y

(continued)

Appendix (continued)

			Moderators													
Study	*N*	*r*	Cohesion measure reliability	Performance measure reliability	Cohesion Type	Item Level	Item Focus	Performance Type 1	Performance Type 2	Virtuality	Team Tenure	Multiple Team Membership	Leadership Structure	Role Clarity	Behavioral Interdependence	Multiple Stakeholders
Lodahl & Porter, 1961	55	0.19	—	—	S	RS	A	O	Effic.	F2F	I	N	H	Y	H	Y
Lorenz, 1985	21	0.22	—	—	GP	DC	A	Mix	Effct.	F2F	AH	N	S	N	L	N
Lowe, 1994	100	0.09	0.66	I	Mix	RS	Mix	B	Effic.	F2F	AH	N	S	N	L	N
MacDonnell et al., 2009, Sample 1	35	0.06	—	I	S	RS	A	B	Effic.	F2F	AH	N	S	N	L	N
MacDonnell et al., 2009, Sample 2	27	0.09	—	I	S	RS	A	B	Effic.	V	AH	N	S	N	L	N
Mach et al., 2010	59	0.29	0.81	I	Mix	RS	B	O	Effct.	F2F	I	N	H	Y	H	Y
Man & Lam, 2003	381	0.34	0.98	0.87	Mix	Mix	Mix	B	Effct.	H	I	N	H	Y	L	N
Marberry, 2007	161	0.21	—	—	Mix	Mix	Mix	O	Effct.	H	ST	N	S	N	L	N
Martens & Peterson, 1971	144	0.15	—	I	Mix	Mix	Mix	O	Effct.	F2F	I	N	S	Y	H	N
Martinez & Tindale, 2015	40	0.26	—	I	Mix	RS	B	Mix	Mix	F2F	I	N	H	Y	H	Y
Mason & Griffin, 2003	47	0.28	—	—	Mix	RS	B	O	Effct.	H	ST	N	S	N	L	N
May, 1994	77	−0.01	—	I	Mix	Mix	Mix	B	Effic.	F2F	AH	N	S	N	H	N
Mello & Delise, 2015	38	0.01	0.94	I	T	RS	B	O	Mix	H	ST	N	S	N	L	N
Melnick & Chemers, 1974	21	0.07	—	I	Mix	Mix	Mix	O	Effct.	F2F	I	N	H	Y	H	Y
Metts, 1996	68	0.58	0.9	—	S	RS	A	Mix	Effct.	F2F	I	Y	n/a	Y	_	N
Michalisin et al., 2004a, 2004b	81	0.28	0.86	I	T	Mix	Mix	O	Mix	H	ST	N	S	N	L	N
Michalisin et al., 2007	80	0.3	0.96	—	Mix	Mix	Mix	O	Effic.	F2F	ST	N	S	N	L	N
Moss, 1998	52	0.2	0.91	—	T	RS	A	Mix	Mix	F2F	AH	N	S	N	L	N
Mulvey & Klein, 1998, Sample 1	59	0.37	0.86	—	S	RS	Mix	O	Effct.	F2F	ST	N	S	N	L	N
Mulvey & Klein, 1998, Sample 2	101	0.35	0.88	—	S	RS	Mix	O	Effct.	F2F	ST	N	S	N	L	N
Naber et al., 2015	123	0.27	0.92	I	—	—	—	B	Effic.	V	AH	N	H	Y	H	N
Nakata & Im, 2010	206	0.12	0.9	0.77	S	RS	A	O	Effct.	H	I	N	H	Y	L	Y
Neal, 1997	25	0.52	0.77	I	Mix	RS	—	O	—	F2F	ST	N	S	N	L	N
Neubert, 1999	21	0.49	0.87	0.83	S	RS	Mix	Mix	Effct.	F2F	I	N	H	Y	L	N

(continued)

Appendix (continued)

			Moderators													
Study	*N*	*r*	Cohesion measure reliability	Performance measure reliability	Cohesion Type	Item Level	Item Focus	Performance Type 1	Performance Type 2	Virtuality	Team Tenure	Multiple Team Membership	Leadership Structure	Role Clarity	Behavioral Interdependence	Multiple Stakeholders
Ng & Van Dyne, 2005	176	−0.04	0.96	—	S	DC	A	O	Effct.	H	ST	N	S	N	L	N
Norms & Niebuhr, 1980	18	0.44	0.68	I	S	Mix	Mix	O	Effic.	F2F	ST	N	S	N	L	N
Panzer, 2003	66	0.16	0.88	I	Mix	Mix	A	Mix	Effct.	H	AH	N	H	Y	H	N
Park & Shin, 2015	47	0.47	0.84	0.96	S	RS	A	O	Effct.	H	I	N	H	Y	L	N
Paskevich, 1996	23	0.59	—	I	T	Mix	Mix	O	Effct.	F2F	I	N	H	Y	H	Y
Patrick, 1997	57	0.23	—	—	Mix	Mix	Mix	O	Effct.	F2F	I	N	H	Y	Mix	Y
Phillips, 1996	91	0.31	0.82	0.85	S	RS	A	O	Effct.	F2F	ST	N	S	N	H	N
Podsakoff et al., 1997, Sample 1	40	0.26	0.88	I	Mix	RS	Mix	O	Effic.							
Podsakoff et al., 1997, Sample 2	71	0.03	0.92	I	Mix	RS	Mix	O	Effct.	F2F	I	N	H	Y	L	N
Porter & Lilly, 1996	80	0.19	0.84	—	T	RS	A	O	Effct.	F2F	ST	N	S	N	L	N
Prien, 2000	51	0.3	0.84	0.9	Mix	Mix	Mix	O	Mix	H	I	N	H	Y	L	Y
Purvanova, 2009	136	0.01	0.89	0.84	Mix	Mix	Mix	O	Effct.	H	ST	N	S	N	L	N
Putti, 1985	18	0.49	—	—	—	—	—	O	—	F2F	I	N	H	Y	_	N
Putz et al., 2013, Sample 1	24	0.49	—	0.97	Mix	Mix	Mix	Mix	Effct.							
Putz et al., 2013, Sample 2	47	0.56	—	0.9	Mix	Mix	Mix	O	Effct.	H	I	N	H	Y	L	Y
Quigley et al., 2007	53	0.23	0.93	I	Mix	RS	Mix	O	Effct.	H	ST	N	S	N	L	N
Rapisarda, 2003	18	0.59	0.94	—	S	Mix	Mix	Mix	Effct.	H	I	Y	S	N	L	N
Rapp, 2010	83	0.31	0.97	0.73	S	RS	Mix	B	Effct.	H	I	Y	H	N	L	Y
Raver & Gelfand, 2005	27	0.5	0.77	I	Mix	RS	B	O	Effic.	F2F	I	N	H	Y	L	Y
Rice et al., 1980	72	0.34	0.98	—	S	RS	A	O	Effct.	F2F	AH	N	S	N	L	N
Rink & Ellemers, 2009	63	0.28	0.77	I	S	DC	A	O	Effic.	F2F	AH	N	H	N	H	N
Riolli-Saltzman, 1999	50	−0.01	0.85	I	S	DC	A	O	Effic.	F2F	I	N	H	Y	L	N
Schmidt, 2008	32	0	0.91	—	S	Mix	Mix	B	Effct.	F2F	I	N	H	Y	H	Y
Seong et al., 2015	116	0.13	0.93	0.89	S	RS	A	O	Effct.	H	I	N	H	N	L	Y
Shapcott, 2010	38	0.55	—	I	Mix	RS	B	Mix	Effct.	F2F	I	N	H	Y	H	Y
Smith et al., 1994	53	0.4	0.85	I	Mix	RS	B	O	Effic.	F2F	I	N	H	Y	H	Y

(continued)

Appendix (continued)

			Moderators													
Study	*N*	*r*	Cohesion measure reliability	Performance measure reliability	Cohesion Type	Item Level	Item Focus	Performance Type 1	Performance Type 2	Virtuality	Team Tenure	Multiple Team Membership	Leadership Structure	Role Clarity	Behavioral Interdependence	Multiple Stakeholders
Stalmeijer et al., 2007, Sample 1	6	0.29	—	—	T	—	—	B	Effct.	H	ST	Y	S	N	L	Y
Stalmeijer et al., 2007, Sample 2	15	0.03	—	—	T	—	—	B	Effct.	H	ST	Y	S	N	L	Y
Stewart et al., 2005	45	−0.06	0.94	—	S	RS	A	O	Effct.	H	ST	Y	S	N	L	N
Stewart et al., 2012	45	0.34	0.87	0.83	S	RS	B	Mix	Effct.	F2F	I	N	S	N	L	Y
Stillman et al., 2014, Sample 1	10	0.08	0.87	I	T	RS	B	O	Effct.	F2F	I	N	S	Y	H	N
Stillman et al., 2014, Sample 2	10	0.37	0.94	I	T	RS	B	O	Effct.	F2F	I	N	S	N	H	N
Stillman, et al., 2014, Sample 3	34	0.09	0.94	I	T	RS	B	O	Effct.	H	I	N	S	Y	H	Y
Stinson & Hellebrandt, 1972, Sample 1	11	0.29	—	—	Mix	—	—	O	Mix							
Stinson & Hellebrandt, 1972, Sample 2	14	0.27	—	—	Mix	—	—	O	Mix	F2F	ST	N	H	Y	L	N
Strang et al., 2014	20	0.26	—	I	S	DC	A	O	Effic.	F2F	AH	N	S	Y	H	N
Szumal, 1995, Sample 1	50	−0.11	—	—	S	DC	A	O	Effic.							
Szumal, 1995, Sample 2	50	−0.29	—	I	S	DC	A	O	Effic.	F2F	AH	N	S	N	L	N
Tekleab et al., 2009	53	0.38	0.93	I	Mix	RS	B	O	Effct.	H	ST	N	S	N	L	N
Terborg et al., 1976	42	−0.04	—	—	S	DC	B	O	Effct.	F2F	ST	N	S	Y	L	N
Tesluk & Mathieu, 1999	88	0.34	—	—	Mix	RS	Mix	Mix	Mix	F2F	I	N	H	Y	L	Y
Tesluk, 1996	114	0.05	0.97	0.84	Mix	RS	A	Mix	Effct.	F2F	I	N	H	Y	L	Y
Tung & Chang, 2011	79	0.39	0.85	0.93	Mix	RS	Mix	O	Effct.	F2F	I	N	H	Y	L	Y
Tziner & Vardi, 1982	94	0.21	0.76	0.79	S	Manipulation	A	O	Effct.	F2F	ST	N	H	Y	H	Y
Tziner & Vardi, 1983	115	0.32	—	—	S	RS	A	Mix	Effct.	F2F	I	N	H	Y	H	Y
Vacharkulksemsuk, 2013	41	0.5	0.93	I	S	Mix	Mix	O	Effct.	H	ST	N	S	N	L	N

(continued)

Appendix (continued)

			Moderators													
Study	*N*	*r*	Cohesion measure reliability	Performance measure reliability	Cohesion Type	Item Level	Item Focus	Performance Type 1	Performance Type 2	Virtuality	Team Tenure	Multiple Team Membership	Leadership Structure	Role Clarity	Behavioral Interdependence	Multiple Stakeholders
Vallejo—Martos, 2011	90	0.04	0.79	0.91	—	—	—	O	Effic.	H	I	N	H	Y	L	N
van Vianen & De Dreu, 2001, Sample 1	24	0.51	0.85	0.75	Mix	RS	B	B	Effic.							
van Vianen & De Dreu, 2001, Sample 2	25	0.21	0.9	0.77	Mix	RS	B	B	Effic.	H	ST	Y	H	N	L	N
Venkatesh & Windeler, 2012, Sample 1	47	0.46	0.75	0.74	S	DC	A	O	Effct.	V	I	N	S	Y	H	Y
Venkatesh & Windeler, 2012, Sample 2	44	0.47	0.74	0.79	S	DC	A	O	Effct.	V	I	N	S	Y	H	Y
Villado & Arthur, 2013	47	0.34	0.73	I	S	Mix	A	O	Effic.	V	AH	N	H	Y	H	N
Wang et al., 2010	109	0.24	0.72	—	S	—	—	—	—	H	I	Y	H	Y	H	Y
Webber, 2008	31	0.6	0.91	0.92	S	Mix	Mix	O	Effct.	H	I	Y	H	N	L	Y
Wei & Wu, 2013	118	0.3	0.87	0.87	S	Mix	B	O	Mix	H	I	N	H	Y	L	Y
Wekselberg et al., 1997	9	0.2	—	—	Mix	DC	A	B	Effct.	F2F	I	N	H	Y	H	Y
Weng et al., 2011	23	0.37	0.92	0.92	S	RS	B	B	Effct.	F2F	ST	N	H	Y	H	Y
Whitney, 1994	36	−0.05	0.91	I	Mix	DC	A	O	Effic.	F2F	AH	N	S	N	L	N
Wilderom et al., 2015	253	0.07	0.95	I	S	RS	A	O	Effct.	F2F	I	N	H	N	L	N
Williams & Castro, 2010	47	0.54	0.93	0.9	S	RS	B	O	Effct.	H	ST	N	S	N	L	N
Williams & Hacker, 1982	9	0.62	—	I	Mix	Mix	Mix	O	Effct.	F2F	I	N	H	Y	H	N
Woehr et al., 2013	60	0.06	0.75	0.88	S	DC	Mix	O	Effct.	F2F	AH	N	S	N	H	N
Wolfe & Box, 1988	36	0.06	—	I	Mix	DC	A	O	Effic.	F2F	ST	N	S	N	L	N
Wolff, 1998	67	0.21	—	—	S	DC	A	O	Effct.	F2F	ST	Y	S	N	L	N
Wong, 2003	74	0.18	0.86	0.73	S	RS	B	Mix	Mix	H	I	N	H	Y	_	Y
Wong, 2004	73	0.21	0.85	I	S	RS	B	O	Mix	H	I	N	H	Y	_	Y
Wood et al., 2013	40	0.46	—	—	Mix	DC	A	O	Effct.	H	ST	N	S	N	L	Y

(continued)

Appendix (continued)

			Moderators													
Study	*N*	*r*	Cohesion measure reliability	Performance measure reliability	Cohesion Type	Item Level	Item Focus	Performance Type 1	Performance Type 2	Virtuality	Team Tenure	Multiple Team Membership	Leadership Structure	Role Clarity	Behavioral Interdependence	Multiple Stakeholders
Yang, & Zhang, 2014	59	0.35	0.83	0.86	S	RS	B	O	Effct.	H	I	N	H	N	L	Y
Yang et al., 2008	83	0.4	0.92	0.88	GP	DC	A	Mix	Mix	H	I	N	H	Y	L	Y
Yousofpourfard, 2012	88	−0.13	0.75	I	S	DC	A	O	Mix	H	ST	N	S	N	L	N
Zaccaro & Lowe, 1988	54	0.45	—	I	T	DC	A	O	Effic.	F2F	AH	N	S	N	L	N
Zakrajsek et al., 2007	18	0.46	0.91	I	Mix	Mix	Mix	B	Effct.	F2F	I	N	H	Y	Mix	Y

Note: T = task cohesion, S = social cohesion, GP = group pride, DC = direct consensus, RS = referent shift, B = behaviors, A = attitudes, O = outcomes, B = behaviors, Effct. = effectiveness, Effic. = efficiency, F2F = face-toface, H = hybrid, V = fully virtual, I = intact, ST = short term, AH = ad hoc, N = no, Y = yes, S = shared, H under leadership structure = hierarchical, H under behavioral interdependence = high, L = low.