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Can mutual trust explain the diversity-performance relationship? A meta-analysis

Pereira Jennifer Feitosa
University of Central Florida

CAN MUTUAL TRUST EXPLAIN THE DIVERSITY-PERFORMANCE RELATIONSHIP?
A META-ANALYSIS

by

JENNIFER FEITOSA PEREIRA
B.S. University of Central Florida, 2010
M.S. University of Central Florida, 2013

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Major Professor: Eduardo Salas

ABSTRACT

Trust is gaining attention for its benefits to both teams and organizations as a whole (Fulmer &

Gelfand, 2012). The difficulty of building it in comparison to the ease of destroying it calls for a

deeper understanding of trust, as well as its relationship with critical team outcomes (Colquitt,

LePine, Piccolo, Zapata, & Rich, 2012). Unfortunately, current research has progressed in a

disjointed manner that requires the integration of findings before a more parsimonious and

descriptive understanding of trust at the team-level can be developed. Beyond this basic

understanding, research is needed to explore the nature of trust in teams comprised of diverse

members, as multi-national, multi-cultural, and interdisciplinary teams are increasingly

characterizing the modern landscape. Thus, this article uses meta-analytic techniques to examine

the extent to which mutual trust can serve as an underlying mechanism that drives the diversity-

team performance relationship. First, surface-level and deep-level diversity characteristics varied

in their impact on trust, ranging from $\hat{\rho} = -.34$ to .12. Value diversity emerged as the most

detrimental, along with the moderating effect of time. Second, 95 independent samples

comprising 5,721 teams emphasized the importance of trust to team performance with a

moderate and positive relationship ($\hat{\rho} = .32$). Third, mediation analyses answered recent calls

(e.g., van Knippenberg & Schippers, 2007) to examine underlying mechanisms that can explain

the diversity-outcomes relationship. This showed age, gender, value, and function diversity to be

related to performance through mutual trust. Furthermore, this study explores whether contextual

(e.g., team distribution) as well as measurement (e.g., referent) issues pose systematic differences

in the diversity-trust and trust-performance relationships. Surprisingly, the construct of trust at

the team-level proved to be generalizable across a number of unique conditions. In addition to

this extensive quantitative review, implications and future research are discussed.

"O SENHOR é o meu pastor, nada me faltará."

(Salmos 23:1)

E nada tem me faltado. Amém!

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CHAPTER ONE: INTRODUCTION

Statement of the Problem

Successful teamwork is built on a foundation of trust. Each member of the team must

establish trust, cultivate trust through his actions and words, and work to maintain it.

Each member also needs to be able to trust his team members to make a commitment to

the team and its goals, work competently with those goals in mind, and communicate

consistently about any issues that affect the team. (Measom, n.d., para. 1)

It is not uncommon to see statements of this type in both popular press outlets and

scholarly publications. The widespread call for the development and maintenance of trust results

from the growing need to keep team performance and other desired outcomes at their optimal

levels. Accordingly, one of the largest team training needs identified focuses on how to develop

trust (Rosen, Furst, & Blackburn, 2006). "Lack of trust is a common complaint among

employees, and people want to be in workplaces with strong levels of trust. Trust is so important

that many scholars say it is the foundation of a healthy workplace." (Russell, 2014, para. 1). The

difficulty of building it compared to the ease of destroying it calls for a deeper understanding of

trust and its relationships with other key constructs (Colquitt, LePine, Piccolo, Zapata, & Rich,

2012). As such, trust benefits to both teams and organizations as a whole (Fulmer & Gelfand,

2012), and it has rendered it a growing area of interest to both researchers and practitioners

around the globe.

Trust is considered a key variable within teams, as it influences a number of team

processes and outcomes (Adler, 2001; Barczak, Lassk, & Mulki, 2010; Fulmer & Gelfand,

2012). While the complexity of trust and its potential to enhance productivity are widely

recognized, research simultaneously shows prevalent decreases in levels of trust throughout organizations (Zeffane & Connell, 2003). For instance, Hurley (2006) found that nearly half of their sample of 800 managers showed hesitation in trusting their own leaders – It is particularly concerning when core members meant to motivate and keep everyone working together have deficits in trust. To improve our understanding of trust, researchers have begun to examine its measurement (e.g., McEvily & Tortoriello, 2011), its dyadic influence on leaders-follower dynamics (Dirks & Ferrin, 2002; Korsgaard, Schweiger, & Sapienza, 1995), and its conceptualization at the organizational-level (Schoorman, Mayer, & Davis, 2007). Despite substantial progress in relation to dyadic and organizational trust (Webber, 2008b), trust at the team level of analysis remains in need of further exploration (Fulmer & Gelfand, 2012).

Beyond this, current trends –such as an increasingly diverse workforce– add new nuances to the development of mutual trust. Indeed, research identifies trust as a key component for multicultural teams (Kirkman & Shapiro, 1997; Rockstuhl & Ng, 2008). Diversity is thought to increase organizational outcomes –as spanning geographical and functional boundaries allows organizations to tackle complex problems and increase competitiveness– but differences among teammates often get in the way of such benefits (Kahane, Longley, & Simmons, 2013). Diversity can influence how team members develop trust in one another (Fiske & Neuberg, 1990), often making it difficult to work together effectively (e.g., Brett, Behfar, & Kern, 2006; Chatman & Flynn, 2001). Understanding how to navigate mutual trust in the global context is thus now a necessity. Research needs to go beyond answering *if* diversity matters for performance, and shift toward focusing on *how* (e.g., Joshi & Rho, 2009; Martins, Milliken, Wiesenfeld, & Salgado, 2009) and *why* (Jackson, Joshi, & Erhardt, 2003).

Though a few reviews have indeed examined trust at the team-level, each has specific limitations. First, Dirks and Ferrin's (2002) meta-analysis focused solely on trust with leaders. Subsequently, Colquitt, Scott, and LePine (2007) broadened that meta-analysis to include trust with co-workers, but outcomes were still restricted to the individual level of analysis. The authors advanced research by parsing out different constructs: trust propensity, trustworthiness, and trust. More recently, another meta-analysis showed trust's impact on cooperation and explored the role of conflict (Balliet & van Lange, 2013). While this study included individual and intergroup trust, it was limited to social dilemma scenarios characterized by unusually high conflicts of interest. For instance, one has to decide whether to cooperate with a partner or defect. When the partner chooses otherwise, defecting can lead to the best outcome however, if both agents decide to defect, the worst outcome will occur (Axelrod, 1987). While these reviews have been critical for developing the trust literature, the true relationship between mutual trust and team performance remain disintegrated within the team context, and further, within the team context characterized by diversity.

Taken together, the current literature suggests that diversity (e.g., Brett, et al., 2006) and trust (e.g., Costa, Roe, & Taillieu, 2001) both play key roles in team effectiveness, however additional research is needed to further understand the nature and strength of relationships among these variables. As such, this study utilizes meta-analytic techniques to investigate how mutual trust can be an underlying mechanism to explain the influence of diversity on team performance, as well as the conditions under which these relationships may show systematic differences.

Purpose of the Current Study

Specifically, this study has three main components. First, I examine the role of trust in the team context – while the impact of trust on team performance is widely accepted in theory, it has not yet been empirically established, particularly across a wide range of team contexts. Second, I explore diversity as an antecedent of mutual trust in order to address current organizational needs. Because discrepancies regarding the impact of diversity on team outcomes can be due in part to models oversimplifying the relationship between diversity and team outcomes (Milliken & Martins, 1996), I unpack the diversity construct, investigating the influence of specific diversity variables. Third, I identify specific conditions under which trust may be more or less important, considering its link to team performance of various types. Namely, this study focuses on the mediating role of mutual trust as well as the differential impact of contextual (e.g., team distribution) and measurement (e.g., dimensionality of trust measures) variables. Answering the call to examine relationships at a more fine-grained level (e.g., van Knippenberg & Schippers, 2007), this meta-analytic review will advance our current knowledge by scrutinizing trust at the team-level and integrating multiple studies to provide a more holistic picture of this construct.

CHAPTER TWO: LITERATURE REVIEW

What Is Mutual Trust?

One of the most widely known definitions of trust in general is the "willingness of a party to be vulnerable to the actions of another party based on the expectation that the other will perform a particular action important to the trustor, irrespective of the ability to monitor or control that party" (Mayer, Davis, & Schoorman, 1995, p. 172). There are two main components of this definition: positive expectations (i.e., cognitive-driven) and the willingness to be vulnerable (i.e., affective/attitude-driven). The former is representative of an individual expecting that his/her teammate is able to perform a task appropriately (Butler & Cantrell, 1984), whereas the latter is associated with an emotional investment and caring for the teammate (Erdem & Ozen, 2006). Both types are likely to influence how members work together, including the monitoring of tasks and back-up behavior (Barczak et al., 2010).

Trust is assumed to be the consequence of positive social exchanges (Colquitt et al., 2012), which makes it a central construct for teams researchers. Considering our focus on trust at the team-level, I adopt Fulmer and Gelfand's (2012) definition: "shared psychological state among team members comprising willingness to accept vulnerability based on positive expectations of a specific other or others" (p. 1174). As reflected in this definition, trust in teams is conceptualized as a multi-dimensional construct (Costa, 2003). However, mutual trust has been defined by teams researchers as "the shared belief that team members will perform their roles and protect the interests of their teammates" (Salas, Sims, & Burke, 2005, p. 561). This definition seems deficient for solely identifying trust as a cognitive component (i.e., belief) without the disclosure of the attitudinal component that comprises this construct. Noting Colquitt

et al.'s (2007) critique of previous meta-analyses for not drawing from their conceptualization of trust that was grounded in Mayer et al.'s (1995) model, I include aspects of trust that encompass both the need for teammates to share positive expectations about each other's competence, as well as the need for teammates to allow themselves to be emotionally vulnerable. As shown in previous research, these dimensions are likely to influence important team processes and outcomes (De Jong & Elfring, 2010; Erdem & Ozen, 2003). I draw from social exchange and social identity theories as a theoretical foundation to understand the development of trust within teams. Social exchange theory provides a deeper look at the expectations, whereas social identity theory focuses more on the foundational aspect of liking associated with categorizations. A summary of my theoretical model and corresponding hypotheses is presented in Figure 2.1. Each hypothesis will now be explained in details.
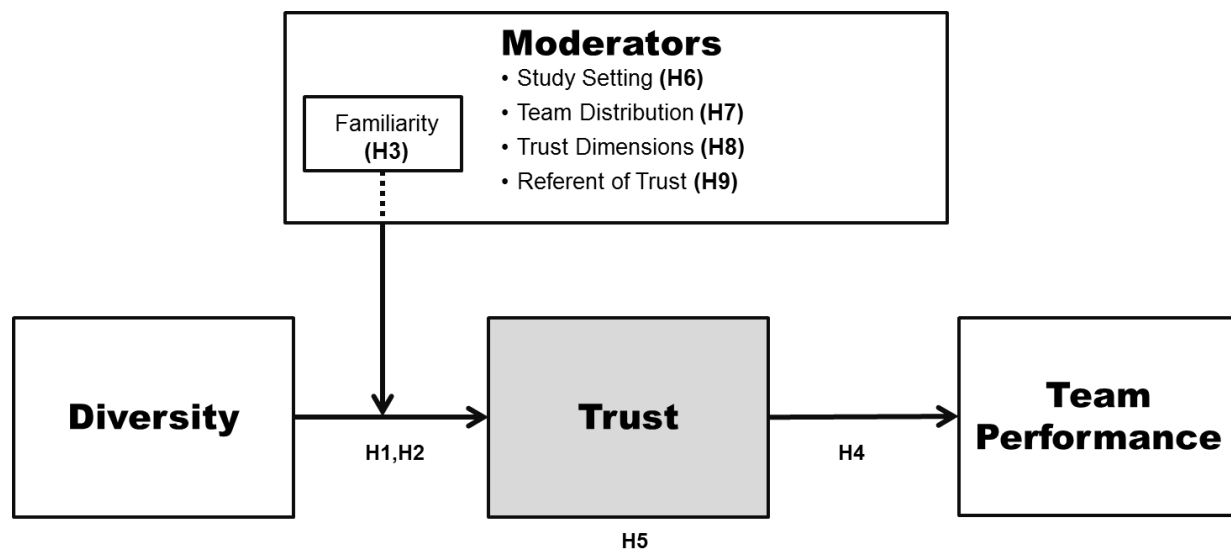
Figure 2.1: Model of trust at the team-level as the underlying mechanism between diversity-performance relationship and its hypothesized moderators

Theoretical Background and Hypotheses

Diversity as an Antecedent of Mutual Trust

Both dispositional (e.g., propensity to trust, Colquitt et al., 2007) and psychological (e.g., justice, Colquitt, Conlon, Wesson, Porter & Ng, 2001) antecedents of trust have been explored in recent literature. While models including such variables have been developed to understand how trust is initially developed (e.g., McKnight, Cummings, & Chervany, 1998; Spector & Jones, 2004), there is a gap in research surrounding the role of diversity as a precursor for developing mutual trust. Consistent with current work on faultlines - defined as hypothetical divides based on individuals' attributes (Lau & Murnighan, 1998) - diverse team members can take longer to be at the same pace with each other in comparison to more homogeneous teams (Nemeth & Kwan, 1985). Namely, perspectives of being different can trigger psychological processes such as anger, shame, and anxiety (Dovidio, Gaertner, & Kawakami, 2003; Miville, Constantine, Baysden, & So-Lloyed, 2005). The more dissimilar individuals are, the less trust they will have towards their peers (Chattopadhyay, 1999).

Diversity is broadly defined as the existing differences across the attributes of multiple individuals, making it a configural team property (Klein & Kozlowski, 2000). While diversity has been considered an important area of research due to globalization (e.g., Cascio & Aguinis, 2005), most work in this area lacks an exploration of underlying mechanisms (van Knippenberg & Schippers, 2007). Though research has shown an impact of members' homogeneity or heterogeneity without the clear specification of the diversity category (e.g., Bowers, Pharmer, & Salas, 2000; Mesmer-Magnus & DeChurch, 2009), the effect of diversity is likely to be undermined when multiple diversity categories are condensed instead of separated. Accordingly, Bell, Villado, Lukasik, Belau, and Briggs (2011) began integrating demographic variable

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findings and moving towards more specific relationships (e.g., functional background, race, educational level, etc.), instead of making a generic statement about diversity being generally beneficial or detrimental. In line with these developments, I conceptualize diversity as both surface- and deep-level, presenting specific hypotheses for each one's relationship with trust.

<u>Surface-Level Diversity</u>

Surface-level diversity refers to dissimilarities in individual characteristics that are easily observable, such as age, gender, and race (Bell et al., 2011). Though some argue that diversity only matters when the attribute is relevant to the task, less task-relevant diversity categories have been related to affective constructs, such as group member satisfaction, intention to remain, and commitment (Jehn, Northcraft, & Neale, 1999). Dissimilarities across team members, even if only on the surface, can trigger ingroup and outgroup divisions (Rink & Jehn, 2010). The social identity perspective helps put the impact of diversity on mutual trust into context (Jackson & Joshi, 2011). Namely, it suggests that belonging to certain groups occurs through categorization and affective components associated with group memberships (Tajfel, 1978). This is especially true when members perceive differences in group memberships and assign more value to certain memberships than to the team as a whole (Rink & Jehn, 2010). Surface-level characteristics – such as age, gender, and race– are thus likely to highlight differences, and trigger categorization processes, thereby influencing mutual trust.

Age, Gender, and Racial Diversity

As teams become more heterogeneous, important team variables can be jeopardized due to dissimilarities (e.g., Mohammed & Angell, 2004; Riordan & Shore, 1997). Specifically, demographic diversity has been associated with higher levels of conflict and lower trust, which in turn decreases team effectiveness (Curşeu & Schruijer, 2010). Drawing from social identity

theory, better outcomes will only emerge when individuals perceive a certain level of comfort with their teammates (Levine & Moreland, 1998). Similarly, a meta-analysis on demographic faultlines found differences in these attributes to negatively impact important team outcomes, particularly when the faultlines included race and sex (Thatcher & Patel, 2011). This is consistent with the finding that age diversity was detrimental to performance when executing complex tasks (Wegge, Roth, Neubach, Schmidt, & Kanfer, 2008). Together, these findings demonstrate the negative consequences of surface-level diversity on team outcomes.

Since individuals define themselves based on group memberships (Hogg & Williams, 2000), variability in these group memberships will create subgroups and imbalance within team dynamics. When individuals are dissimilar, it becomes challenging to develop positive attitudes towards their team (Riordan & Shore, 1997). Accordingly, age diversity has been negatively related to attitudes towards the organization (e.g., organizational attachment, Tsui, Egan, & O'Reilley, 1992; constructive affective climate, Boehm, Kunze, & Bruch, 2014), whereas racial diversity has been directly linked to negative attitudes within teams at work (Riordan & Shore, 1997). For instance, racial composition was shown to influence team performance especially in teams with low levels of mutual trust (Fisher, Bell, Dierdorff, & Belohlav, 2012). Gender diversity is also one of the inputs to both mutual trust and knowledge sharing in dyads (Chowdhury, 2005). Broadening this to larger teams, gender diversity has been highlighted as ongoing issues for trust levels (Susman, Gray, Blair, & Perry, 2002). Although all three of these variables have a history of negatively influencing team dynamics, the evidence regarding the influence of age, gender, and racial diversity on mutual trust can vary in intensity (Bell et al., 2011). Therefore, it is important to parse out their differential impact on mutual trust. Consequently, I hypothesize the following:

Hypothesis 1a-c: Surface-level [i.e., (a) age, (b) gender, (c) racial] diversity is negatively related to mutual trust.

Deep-Level Diversity

Deep-level diversity variables, in contrast, are less readily observable, such as cultural values and members' levels of expertise. As noted by Jackson and colleagues (2003), recent years have seen a resurgence of interest in the effects of underlying attributes such as personality and attitudes (cf. Haythorn, 1968; Hoffman, 1959). Indeed, several studies have examined attitudinal and other measures of "deep" or underlying diversity categories (e.g., Barrick, Stewart, Neubert & Mount, 1998; Harrison, Price, Gavin & Florey, 2002). Similarity on such attributes can facilitate interactions and trigger social categorization processes, prompting members to view each other as trusting and supportive (Mannix & Neale, 2005). In contract, deep-level diversity, as evidenced through social interactions may lead members to conclude that others have different insights, opinions, and preferences than themselves, prompting them to view diverse others as members of their outgroup. In turn, this can lead to differential treatment of dissimilar others, causing damage to shared expectations and perceived predictability within the team. When leaders treat members differently, for example, levels of mutual trust can be negatively impacted (Liu, Hernandez, & Wang, 2014). On the other hand, differences in perspectives have also been associated with positive team outcomes (McLeod, Lobel, & Cox, 1996). Below, I expand on different types of deep-level diversity: those with potential negative (i.e., value) and positive (i.e., function/educational background) consequences for mutual trust.

Value Diversity

Value diversity has emerged as a key deep-level topic of interest, as it can have tremendous repercussions to team outcomes (Harrison et al., 2002; Ilgen, Hollenbeck, Johnson,

& Jundt, 2005). People feel more attracted to and make favorable evaluations of those who share attributes with them to a greater extent. Accordingly, a recent meta-analytic review showed culturally diverse teams who are likely to have greater variability in values to have higher task conflict and lower cohesion (Stahl, Maznevski, Voigt & Jonsen, 2010). On the opposite spectrum, sharing similar values is related to high levels of trust in teams (Jehn & Mannix, 2001). Accordingly, individuals who come from similar cultural value systems are more likely to be perceived as trustworthy and cooperative (George & Chattopadhyay, 2005).

Aside from social identity theory (Tajfel, 1978) and the social categorization perspective (Turner, 1982), the similarity/attraction paradigm (Byrne, 1971) is also built on the rationale that individuals are more attracted to similar others, which in turn leads to more positive feelings towards ingroup members. Because values can shape people's behaviors (Bell, 2007), being able to anticipate people's behaviors reinforces one's own values (Harrison et al., 2002). This is also consistent with uncertainty management theory, which states that people will be less anxious when they know how others are likely to behave (Colquitt et al., 2012; Lind & Van den Bos, 2002). To reinforce this theory, people seem to seek encounters with similar individuals because they are perceived as more predictable (Brewer, 2002; Pelled & Xin, 1997), which is a basis of the formation of ingroups and outgroups (Gerard & Hoyt, 1974). For instance, differences in values have been shown to be primary triggers of the categorization of ingroups and outgroups within teams (Milliken & Martins, 1996; Thomas, 1999) and organizations (Schneider, 1987). Value diversity will then be brought to the forefront as influencing team emergent states (Jehn et al., 1999). Taking these arguments together, I hypothesize the following:

Hypothesis 2a: Deep-level [i.e., (a) value] diversity is negatively related to mutual trust.

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Functional and Educational Diversity

Unlike the aforementioned diversity categories, differences in functional or educational diversity can be more positive and complementary within teams. This can yield beneficial team and organizational outcomes (e.g., Bantel & Jackson, 1989), rather than leading to conflict depending on their relevance to the team's task. When comparing to other demographic types of diversity, functional and education diversity have the advantage of triggering a lot less social categorization within teams (Dahlin, Weingart, & Hinds, 2005; Kearney, Gebert, & Voelpel, 2009). This can facilitate the social exchange across teammates, but at the same time bringing their individual expertise to the forefront without strong faultiness. Drawing from optimal distinctiveness theory (Brewer, 1993), individuals have the need to feel connected to each other, but also to maintain a certain level of uniqueness. This balance is better achieved when differences are task-related (e.g., functional and educational diversity) instead of those differences (e.g., gender and values) that can cause relationship and not task conflicts.

Accordingly, functional diversity is an exemplary category often referred to when trying to highlight the positive outcomes of diversity (e.g., Ancona & Caldwell, 1992). Considering the growth of cross-functional teams (Malhotra, Majchrzak, & Rosen, 2007), efforts to build trust in them are prominent and forthcoming. For instance, reducing conflict (Cronin & Weingart, 2007) and sustaining trust (Peters & Karren, 2009; Webber, 2000) are crucial for improving functionally diverse teams. This is not different for educational diversity, which has been shown to increase the sense of belonging in the team (Kearney et al., 2009). Educational diversity can be categorized as an informational demographic diversity type (e.g., Jehn, Chadwick, Thatcher, 1997), but it differs from other surface-level categories for increasing information and decreasing categorization (Dahlin et al., 2005).

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One's functional and educational background is likely to have a tremendous impact on how people interact, especially when these backgrounds influence their roles and unique contributions to the team. A recent meta-analysis found a positive relationship between both functional and educational diversity and team innovation ($\rho=.18$, $\rho= .23$, respectively; Bell et al., 2011). This likely emerges from the positive emergent states and team processes that these diverse teams engage in. Even though functional and educational diverse teams may show higher levels of what can be first seen as detrimental to teamwork, task conflict in teams (Jehn et al., 1997; Pelled, Eisenhardt, & Xin, 1999), this type of conflict can often lead to positive outcomes (de Wit, Greer, & Jehn, 2013). If the levels of disagreements are solely related to the task and not the team members, a shared psychological state that includes the belief and feelings of competence and honesty within the team can still properly emerge (Simons & Peterson, 2000). Taken together, these diversity variables appear to positively trigger important emergent states that likely strengthen mutual trust. Thus, I hypothesize:

> *Hypothesis 2b-c: Job-related deep-level [i.e., (b) functional, (c) educational] diversity is positively related to mutual trust.*

Type of Diversity: The Role of Time

Categorizing differences as surface- and deep-level diversity enables us to begin parsing out some of the discrepancies in diversity findings (Bell, 2007). Although it is common to assume that surface-level diversity is correlated with deep-level diversity (Phillips, Northcraft, & Neale, 2006; Tenzer et al., 2014; Tsui, Porter, & Egan, 2002), this is not always the case. Specific diversity categories that team members vary on (e.g., age, values) can impact team outcomes differently. For instance, research has started to accumulate that over time deep-level

diversity is more detrimental than surface-level diversity (Harrison et al., 1998; van Knippenberg & Schippers, 2007).

Taking time into consideration, surface-level diversity (e.g., age, gender, race, and physical appearance) has been shown to have a negative effect on teams in their early stages of their lifespan (Carpenter, 2002; Harrison et al., 1998; Pelled et al., 1999). At first, team members do not have a lot of information to base their opinions on, thus surface-level differences can serve to negatively impact social integration (Harrison, Price, & Bell, 1998), cooperation (Chatman & Flynn, 2001), and attitudes (Riordan & Shore, 1997). Accordingly, these surface-level cues have been highlighted as antecedents of trust in swift starting action teams (Wildman, Shuffler, Lazzara, Fiore, Burke, Salas, & Garven, 2012). However, when looked at across different types of teams - with varying team familiarity - the relationship between demographic diversity and group performance is often non-significant (Pelled et al., 1999). This suggests surface-level diversity may have a detrimental impact at first, but this impact may fade away over time.

On the other hand, deep-level diversity (e.g., attitudes, values, personality, religion, preferences, and experience) acts as a hindrance to a team's knowledge sharing (Makela, Kalla, & Piekkari, 2007). Considering one of the main benefits of diversity is that it allows for the utilization of multiple, unique perspectives, this compositional barrier can pose as a serious threat (Stasser & Stewart, 1992). Once team members learn about others' diverse backgrounds, their levels of comfort can greatly diminish. Along these lines, recent research by Jiang, Chua, Kotabe, and Murray (2011) found that intercultural trust is especially difficult to build. This leads to the assumption that deep-level diversity is not only more lasting, but also more impactful to teams. Since this type of diversity takes longer to be identified, research has suggested that

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deep-level diversity can become more important and often detrimental to team functioning over time (Harrison et al., 2002). After working together, team members are likely going to be more bothered by divergence in deep-level than surface-level variables. With this in mind, I hypothesize the following:

> *Hypothesis 3: Surface-level diversity shows a stronger relationship with mutual trust than deep-level diversity in teams of low familiarity, whereas deep-level diversity shows a stronger relationship with mutual trust than surface-level diversity in teams of high familiarity.*

Team Performance as a Consequence of Mutual Trust

The impact of trust can be seen on individual-, team- , and even organizational-level outcomes (Fulmer & Gelfand, 2012). Regarding teams, trust has been identified as a main supporting mechanism for teamwork (Salas et al., 2005), with both affective and cognitive components of trust playing a role (Barczak et al., 2010). Salas and collagues (2005) highlight the importance of mutual trust in teams by allowing information to flow more freely, including recognizing mistakes and incorporating constructive feedback. This assertion is consistent with previous findings that identify trust as an antecedent of desirable communication (Eigel & Kehnert, 1996; Zakaria, Amelinckx, & Wilemon, 2004), cooperation (McAllister, 1995; Mishra, 1996), perceived justice (Liu et al., 2014), and cohesion (Hansen, Morrow, & Batista, 2002; Mach, Dolan, & Tzafrir, 2010) in teams. Thus, the positive consequences of trust support it as a key element to for improving teamwork.

There is an underlying assumption that trust must exist in order for positive social exchanges to occur (Colquitt et al., 2007). Drawing from social exchange theory, individuals behave in certain ways while expecting reciprocity from one another (Blau, 1964). Over time, a series of interdependent interactions occur, generating mutual obligations that can facilitate high-

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quality interpersonal relationships (Cropanzano & Mitchell, 2005). When there is a lack of confidence that such obligations will be fulfilled, however mutual trust may suffer, resulting in negative consequences for the team. When trust is not established early on, both types of conflict (e.g., relationship and type) increase and team performance can suffer over time (Peterson & Behfar, 2003). Conversely, when the appropriate climate exists, trust can lead to higher team performance (Salas, Salazar, Feitosa, & Kramer, 2013). Because trust enables team members to spend less time worrying about other members' performance and intentions (Colquitt et al., 2007), they can focus on their main tasks, and also can feel comfortable sharing input that can improve team performance (Salas et al., 2005). Additionally, a cyclical process may occur, where teams are likely to perform better when members trust each other, and in turn, members are more likely to trust each other when the team performs well (Dirks, 2000). Drawing from these theories, as well as existing studies that do indeed show a positive influence of trust on team performance (e.g., Kanawattanachai & Yoo, 2007; Webber, 2008), I hypothesize the following:

Hypothesis 4: Mutual trust is positively related to team performance.

Underlying Mechanisms of Diversity-Performance in Teams

The Mediating Role of Mutual Trust

As mentioned, team members can be similar or diverse in relation to a number of attributes, such as their socio-demographic background, attitudes, behaviors, and/or psychological traits (McPherson, Smith-Lovin, & Cook, 2001). In today's diverse workforce, individuals' tendency for group categorization can lead to faultlines that are very detrimental to work in groups (Thatcher & Patel, 2011). More specifically, diversity has been shown to

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negatively influence performance (Chatman & Flynn, 2001; Schippers, Den Hartog, Koopman, & Wienk, 2003), especially the less task-related diversity categories (Simons, Pelled, & Smith, 1999; Williams & O'Reilly, 1998). However, the diversity-performance link has also shown different patterns of results that are conflicting with previous research, such as a positive relationship (Bantel & Jackson, 1989; Horwitz & Horwitz, 2007; Jehn et al., 1999), a non-significant relationship (Bowers et al., 2000; Webber & Donahue, 2001), or even a change in relationship depending on the level of a third variable (Chatman et al., 1998; Polzer, Milton, Swann, 2002; Timmerman, 2000).

If the discrepancies in results are to be remedied, it is important to move beyond diversity's role to distal outcomes and to include the understanding of underlying, explanatory mechanisms that drive the diversity-performance relationship. Research has long called for the investigation of potential mediators instead of oversimplistic models that only link diversity to performance outcomes (Milliken & Martins, 1996; van Knippenberg & Schippers, 2007). Several studies have begun to do so - faultlines have been found to affect performance in a negative manner through a lack of trust and information sharing (Lau & Murnighan, 2005; Rico, Molleman, Sanchez-Manzanares, & van der Vegt, 2007), for example.

Considering the proposed relationship between diversity and trust as well as trust and performance, trust is a likely mediator of the diversity-performance relationship. Trust has been shown to mediate relationships between several important team inputs and outcomes (e.g., shared leadership and group performance, Drescher, Korsgaard, Welpe, Picot, & Wigand, 2014), including that between diversity and organizational citizenship behavior (Chattopadhyay, 1999), suggesting that it may be a core emergent state for facilitating team outcomes of interest. As described above, social categorization processes may lead individuals to perceive diverse team

members as outsiders unworthy of their trust (Jackson & Joshi, 2011) Additionally, dissimilar others are often viewed as less predictable (Colquitt et al., 2012), exacerbating the negative impact of diversity on trust, as trust is heavily grounded in the concept of positive expectations. Lower levels of mutual trust that can result from diversity then go on to influence team performance. Decreased trust may prevent team members from sharing knowledge and new ideas with each other, appropriately distributing workloads and relying on one another, and some from focusing on the broader task if they are too caught up in worrying about the performance and intention of others, all detracting from overall team performance. Indeed, diverse teams have been shown to face process loss, lower cohesion, and issues with trust (Brett, Behfar, & Kern, 2007; Salas, Stagl, & Burke, 2004), which in turn can influence team performance outcomes. On the other hand, some task-related types of diversity (e.g., functional diversity) may serve to increase mutual trust, and in turn, team performance. When individuals perceive diversity in characteristics that are relevant to team performance, they may be more likely to rely on, or trust in one another's distinct areas of expertise. This increased trust can motivate team members to engage in more cooperative team processes, ultimately facilitating the achievement of positive team outcomes. Thus, based on these arguments, I hypothesize the following:

Hypothesis 5: Mutual trust mediates the relationship between diversity and team performance.

Moderators

There are a number of issues with trust research that remain unanswered, such as a wide range of different mutual trust measures trying to capture the same construct (McEvily & Tortoriello, 2011; Schoorman et al. , 2007). Moderators can then help in clarifying discrepancies from previous studies by pointing specific contextual and measurement idiosyncrasies in trust at

the team-level. An ongoing issue to be addressed in this study is under which conditions the relationship to trust will become more or less important. With that in mind, the following paragraphs will expand on the following question: *What are the specificities that change the way mutual trust is related to diversity and team performance?*

<u>Study Setting</u>

Empirical studies are often run in either laboratory or field settings. They each have their advantages and drawbacks. Within laboratory settings, there is more control over what is being measured and manipulated. This kind of research design has more internal consistency that allows one to feel more confident regarding the actual effects found in the study (Shadish, Cook, & Campbell, 2002). The relationships found in laboratory can be more certain, but at the same time they may not necessarily mimic the level of familiarity and interaction that individuals face in the real world. On the other hand, field studies albeit not being able to control other variables provide more generalizable information, which is associated with higher external validity (Shadish et al., 2002). Thus, it is important to test relationships in both settings, but also parse them out to identify systematic differences.

While it is common for teams researchers to assume laboratory studies will generalize to intact groups in the field (Levine & Moreland, 1988), laboratory study groups often spend minimal time executing their task, in comparison to field studies (e.g., Miner, Chernysheuko, & Stark, 2000). Trust research is often static and evaluated in early phases of teams (Webber, 2008). Considering the importance of temporal elements within teams (McGrath & Tschan, 2007), assessing trust too early can overlook the importance of this construct in teams. Kozlowski, Gully, Nason, and Smith (1999) highlight that effective teams do not start initially with their full capabilities; instead, they form, establish regulatory mechanisms, and evolve over

time. This is not different when referring to trust, which has also shown to develop over time (Burke, Sims, Lazzara, & Salas, 2007; Webber, 2008; Williams, 2001). For instance, Lewicki, Tomlinson and Gillespie (2006) highlight the difference in trust levels after individuals get to know each other better. Consequently, significant differences when examining the same relationship in a field setting instead of laboratory are likely to be found. There are additional dynamics that real teams face that teams in laboratory settings do not, such as the dealing of consequences day-after-day if trust is broken between team members. Psychological constructs, in general show a weakened effect when in laboratory settings (Eagly & Chaiken, 1993). Consequently, it is coherent to hypothesize:

> Hypothesis 6: The relationship between (a) diversity and mutual trust, and (b) mutual trust and team performance is stronger in field (rather than laboratory) settings.

Team Distribution

Nowadays, teams can be dichotomized as either co-located (i.e., more traditional type of teams that share the same geographic location) or distributed (i.e., in separate geographical locations). With globalization and the advance of technology, distributed teams are becoming more prominent (Gibson, Maynard, Young, Vartiainen, & Hakonen, 2015). This calls for a better understanding how team members perform tasks with limited face-to-face interaction. Fortunately, this growing trend of collaborating across geographic boundaries can actually be beneficial for diminishing the negative effect of diversity (Garrison, Wakefield, Xu, & Kim, 2010). Specifically, the use of technology between team members can decrease social presence (Daft & Lengel, 1986; Kirkman & Mathieu, 2005). In turn, the decrease of social presence can eliminate –or at least decrease– the social categorization associated with certain diversity characteristics. The context can make one's race, age, or even gender, depending on the modality

of the virtual tool, less salient. Even though some may find that trusting beliefs influence cohesion in distributed teams (Jarvenpaa, Shaw, & Staples, 2004), it is still undecided as to whether members disclose or are able to sense such information in this context. Consequently, diversity in distributed teams should no longer have the same negative relationship to trust as it does in co-located teams where the cues are readily available to all team members.

On the other hand, trust is one of the main challenges in distributed teams (Kirkman, Rosen, Tesluk & Gibson, 2006). Researchers identify the importance of trust early on the lifespan of these teams as a precursor of team cohesion (Kuo & Yu, 2009). Accordingly, team coordination decreases as virtuality increases, and trust mediates such relationship (Penarroja, Orengo, Zornoza & Hernandez, 2013). Knowing that trust plays a large role in important team outcomes (e.g., satisfaction; Morris, Marshall, & Rainer, 2002), steps are taken to reduce uncertainty and increase trust through establishing rules and norms in distributed work teams (Walther & Bunz, 2005). One component of mutual trust includes being able to focus on the task without having to monitor others' performance, but the possibility of "spot checking" team members may be limited or nonexistent in this context. Others have even turned to leadership to boost trust and commitment in distributed teams (Joshi, Lazarova, & Liao, 2009). Based on previous arguments, the role of trust to team functioning is brought to the forefront in distributed contexts more so than traditional co-located teams. Therefore, I hypothesize the following:

> *Hypothesis 7: The relationship between (a) diversity and mutual trust is stronger when the team is co-located (rather than distributed), whereas the relationship between (b) mutual trust and team performance is stronger when the team is distributed (rather than co-located).*

Measurement Issues

Regardless of the popularity of higher-order constructs in organizational research, studies lack consistency in how they develop and/or validate these constructs (Johnson, Rosen, & Chang, 2011). This is not different for trust at the team-level. When measuring mutual trust, researchers point out the difficulty of having a lack of measures at the team-level and also lack of consensus regarding the dimensionality of trust (Costa & Anderson, 2011). Considering the complexity and potential multidimensionality of mutual trust, it is not surprising that its measurement has diverged into a number of different scales. When compiling the list of current measures (see Table 2.1 for details), most of the measures have a number of inconsistencies regarding its measurement source and target even in known scales. These items include individual-level items (e.g., "I can rely on my team members to keep their word" from DeJong & Elfring, 2010), interpersonal/relational components (e.g., "If I got into difficulties at work, I know my workmates would try and help me out" from Cook & Wall, 1980), or using one's team as the referent (e.g., "We are all certain that we can fully trust each other" from Simons & Peterson, 2000). Some items can even have members from outside of the team as a source (e.g., "Other work associates of mine who must interact with this individual consider him/her to be trustworthy" from McAllister, 1995), or even just include part of the team as a target (e.g., "Most of my teammates approach his/her work with professionalism and dedication" from Dayan & Di Benedetoo, 2010, team-level adaptation of McAllister, 1995).

Consequently, it is important to parse out the differences in measurement and its impact to the understanding of mutual trust. In order to address the gap in measurement of trust at the team-level, I set forth to clarify theoretical and practical issues including the dimensionality of trust and the referent of the used measures.

Table 2.1: Overview of Current Trust Measures

Author	Measure	Definition	Dimensions	Referent	Sample Item
Unidimensional					
Chang, Sy, & Choi (2012)	Intrateam Trust	Global	-	Team members	"Members of our team can speak frankly with one another"
Cook & Wall (1980)	Interpersonal Trust at Work	Global	-	Mixed: Workmates/ Self	"If I got into difficulties at work, I know my workmates would try and help me out"
Dirks (2000)	Trust in Leader	Global	-	Leader	"I have a sharing relationship with the coach. I can freely share my ideas, feelings, and hopes with him"
DeJong & Elfring (2010)	Intrateam Trust	Global	-	Self	"I trust my team members"
Jarvenpaa & Leidner (1998)	Trust	Global	-	Mixed: Team members/ Self	"Overall, the people in my group were very trustworthy"
Lewis (2003)	Transactive Memory in Teams	Global	-	Self	"How willing are you to rely on your team's task related skills and abilities?"
Moorman et al. (1992); adapted by Porter & Lilly (1996) to group	User trust in researcher	Global	-	Self	"I generally do not trust (my research)"
McCroskey & Teven (1999)	Trustworthiness	Global	-	Dyadic	"Rate the impression of group member X from 1 (*untrustworthy*) to 7 (*trustworthy*)"

Author	Measure	Definition	Dimensions	Referent	Sample Item
Prichard & Ashleigh (2007)	Trust	Global	-	Self	"I felt a sense of loyalty towards other members of my team"
Shackley-Zalabak, Ellis, & Cesaria (2000)	Organizational Trust Survey	Global	-	Organization (adapted)	"I feel connected to the other team members"
Simons & Peterson (2000)	Intragroup Trust	Global	-	We	"We are all certain that we can fully trust each other"
Zolin et al. (2004)	Ability trust	Specific	Behavioral	Self	"How often have you needed to check/ask to see if this team member had completed his/her commitments?"

Two-factor Model

Author	Measure	Definition	Dimensions	Referent	Sample Item
McAllister (1995); adapted by Kanawattanachai & Yoo (2007) to team	Interpersonal Trust	Specific*	• Affect-based • Cognition-based	Mixed: We/ Self/ Other	"The team members have a sharing relationship. The group members can freely share their ideas, feelings and hopes," and "I can rely on my team members not to make my job more difficult with careless work."
Earle & Siegrist (2006)	Cooperation	Specific*	• Social trust • Confidence	Self	"I couldn't trust that person on the advisory team"
Gillespie (2003)	Behavioral Trust Inventory	Specific*	• Reliance • Disclosure	Self	"How willing are you to rely on your leader to represent your work accurately to others?"

Author	Measure	Definition	Dimensions	Referent	Sample Item
Kramer (1999)		Specific*	• Trust • Distrust		-- Theoretical review --
Three-factor (or more) Model					
Elkins & Derrick (2013)	Behavioral Approach	Specific*	• Ability • Benevolence • Integrity	Self via behavioral coding	"Dependable, honest, reliable"
Mayer & Gavin(2005)	Trust	Specific*	• Ability • Benevolence • Integrity	Self	"I really wish I had a good way to keep an eye on X"
Lewicki & Bunker (1995)	Trust	Specific*	• Calculus-based • Knowledge-based • Identification-based		-- Theoretical review --
Costa (2000)	Team trust	Specific*	• Propensity to trust • Perceived trustworthiness • Cooperative behaviors • Monitoring behaviors	Mixed: Team members/ Other	"In my team some people have success by stepping on other people"
Hubbell & Medved (2001)	Managerial Trust	Specific*	• Behavioral consistency • Behavior integrity • Manner and quality of information • Demonstration of concern	Supervisor	"Our supervisor/manager was honest with our team"

Note. *= When not composited across dimensions

Dimensionality of Trust

The aforementioned dimensionality issue and number of extant measures are both

consequences of the proliferation of the definition of trust. For instance, definitions range from

rational, behavioral components (e.g., a conscious regulation of the dependence on the target;

Williamson, 1981) to a psychological state regarding the willingness to be vulnerable (e.g.,

Rousseau, Sitkin, Burt, & Camerer, 1998) even without knowledge as to one's competence

(Mayer, Davis, & Schoorman, 1995). Another component of the definition of trust that is often

mentioned includes the positive expectations of the target's behaviors (Lewicki & Bunker,

1995). To begin distinguishing these different definitions and measures, Colquitt and colleagues

(2007) meta-analyzed the trust literature and separated it from trustworthiness and propensity to

trust. These authors also extracted three key types of content: positive expectations, willingness-

to-be vulnerable and direct measures. In a similar attempt, Dirks and Ferrin (2002) classified

them as cognitive, affective, and overall; which can be respectively comparable to Colquitt et

al.'s content types. These can enrich our current understanding of the conceptualization of trust.

Consequently, there has been a push towards the adoption of a more nuanced view of trust

(Lewicki et al., 2005).

Despite the fact that many researchers have not used trust at the team-level (Surva, Fuller,

& Mayer, 2005), literature begins to point in the direction that studying the components of trust

can be beneficial. Through the study of affective and cognitive components separately, these

dimensions show they can predict different outcomes (e.g., Akgün, Byrne, Keskin, Lynn, &

Imamoglu, 2005; Colquitt et al., 2012). Research on diversity, for instance, show its impact on

trust due to individuals' social categorization. Such social categorizations are often associated

with more affective constructs (e.g., anxiety, Dovidio et al., 2003; anger, Miville et al., 2005;

etc.). When social categorization results from similarity, these similar others are often labeled as

trustworthy and supportive (Mannix & Neale, 2005). Considering the affective component of

trust as one's willingness to be vulnerable and caring for their teammates (Erdem & Ozen, 2003),

diversity is likely to have a strong impact on the extent to which team members' care and

monitor each other. Accordingly, researchers have found a link between affective trust and

interpersonal relationships (Webber, 2008). Consequently, diversity –with its many categories– is likely to have a higher impact on the affective component of mutual trust than the cognitive or behavioral facets of this construct.

When trust is defined as having positive expectations regarding others' behaviors, one cognitively recognizes the referent as someone who is reliable, responsible, and competent. This is more closely related to the cognitive-based trust, and linked to more important team outcomes (e.g., team performance). Because cognitive trust is associated with one's competence instead of motives and values (Barber, 1983; Sitkin & Roth, 1993), it brings the task-relatedness of cognitive trust to the forefront. This could have potentially led to the phenomena that many trust measures solely focus on the cognitive component (Dirks & Ferrin, 2002). This type of trust is not only more prevalent in the literature, but more challenging to withstand (McAllister, 1995; Webber, 2008). When cognitive trust exists, team members can refrain from questioning others' competence and focus on their tasks (Colquitt et al., 2007; Salas et al., 2005). Thus, team performance is likely to have a stronger relationship to cognitive component of mutual trust than the affective or behavioral facets of this construct.

As previously mentioned, the affective trust is likely more important for the interpersonal relationships that are impacted by diversity while cognitive trust is related to one's ability and integrity that influence how the team perform. Lau and Cobb (2010) properly differentiated previous literature on the components of trust as (1) affective (McAllister, 1995), relational (Kramer, 1999; Rousseau et al., 1998), or identification-based (Lewicki et al., 2005) form of trust, and (2) cognitive (McAllister, 1995), calculus-based (Lewicki et al., 2005; Rousseau et al., 1998), or rational (Kramer, 1999) form of trust. Accordingly, previous research found that affect-based trust was more predictive of team psychological safety, whereas cognition-based trust was

more predictive of team potency (Schaubroeck et al., 2011). Ultimately, in addition to

considering the behavioral component of mutual trust, it is coherent to then hypothesize:

> *Hypothesis 8: The relationship between (a) diversity and mutual trust is stronger when the mutual trust measure is affective (rather than cognitive or behavioral), whereas the relationship between (b) mutual trust and team performance is stronger when the mutual trust measure is cognitive (rather than affective or behavioral).*

Referent of Trust

Recommendations regarding the aggregation of constructs exist (e.g., Johnson et al.,

2011; Kozlowski & Klein, 2000), but researchers vary in how they aggregate data to the team-

level. A common way is to aggregate self-report measures from the individual-level to the team-

level of analysis. Aggregate constructs emerge from the summation of lower-level indicators

(Johnson et al., 2011). However, studies have argued and shown that having the referent to the

proper level can explain variance above and beyond those that use the individual as referent

(English, Griffith, & Steelman, 2004). According to the compatibility principle (Ajzen, 2005;

Fishbeing & Ajzen, 1974), it is important that both variables of interest –such as, mutual trust

and satisfaction– match in regards to their level of analysis and target (i.e., team). To further

support this idea, Chan (1998) argues for the referent-shift consensus model utilizing "we"

versus "I" when collecting data from individuals for constructs that require consensus and

distinction from one level to another (similar to claims from Klein, Dansereau, & Hall, 1994;

Rousseau, 1985). Empirical research has also shown that targeting the unit –instead of the

individual– can lead to better predictions of justice climate and team effectiveness (Whitman,

Caleo, Carpenter, Horner & Bernerth, 2012). Some have followed this approach by adapting

known measures, such as McAllister (1995), and use the referent of *teammate* (Dirks, 1999;

Webber, 2008) or adapting Schoorman, Mayer, and Davis (1996) with the *group* as a referent

(Polzner, Crisp, Jarvenpaa, & Kim, 2006), but the inconsistencies within these instruments

remain. Table 2.2 shows a breakdown of self-report in which "I" is used as referent versus "we."

Based on the arguments above, I hypothesize the following.

> *Hypothesis 9: The relationship between (a) diversity and mutual trust, and (b) mutual trust and team performance is stronger when the source of measurement is "we" (rather than "I").*

CHAPTER THREE: METHODOLOGY

<u>Literature Search</u>

To identify primary studies for inclusion, a search was conducted using the American Psychological Association's PsycINFO (1895-April 2015), Business Source Premier (1915-April 2015), and Dissertation Abstracts International (1981-March 2015). Keywords included *trust* and *team* or *trust* and *group*. Searches produced 21,533 results that were then reviewed to assess their relevance to the current study. Supplementing this, "*team trust*" and "*group trust*" were searched in Google Scholar, and crosschecking was conducted of studies from previous meta-analyses on trust (e.g., Balliet & Van Lange, 2013; Colquitt et al., 2007; Dirks & Ferrin, 2002) and diversity (e.g., Bell, 2007; Bell et al., 2011) to ensure that all relevant articles are included. A final database of 93 articles was obtained after evaluating studies against various inclusion criteria. These final set of articles are marked with an asterisk in the reference list. A total of 130 independent effect sizes were found, in which 35 pertained to the diversity-trust relationship and the remaining 95 were part of the trust-performance relationship (see Appendix A for effect sizes and further details).

<u>Inclusion Criteria</u>

To be included in the meta-analysis, certain criteria had to first be met. First, the study had to contain enough information to calculate a correlation between trust at the team-level and either diversity (i.e., surface- or deep- level) or team performance. Studies that did not examine trust at the team-level of analysis were not included (e.g., trust with supervisor, trust with organization, etc.). Similarly, primary studies in which the antecedent or consequence of trust

measure was not at the team-level (e.g., correlation between mutual trust and individual performance) were excluded from the meta-analytic database. Second, effect sizes representing the trust in children or animal samples were not included because they were not relevant to our topic of interest (i.e., trust in work teams). Third, teams had to contain three or more individuals to be included in this analysis. Even though teams have been defined as two or more individuals working together towards a shared goal (Salas, Dickinson, Converse, & Tannenbaum, 1992), dyads are shown to have distinct characteristics from other teams. These differences include the time duration, strength of emotional ties, limited team dynamics and the way research is conducted (Moreland, 2010), which can all pose systematic differences in how mutual trust develops.

Coding Procedures

Studies that met the inclusion criteria were coded for several categories of variables. Three raters first coded and discussed 50 articles together in order to develop a shared mental model of the coding scheme. This process ensured that the coding was appropriate, rigorous, and aligned with the teams literature. Subsequently, all remaining articles were divided between raters in a manner that resulted in every article being coded by at least two raters. Raters coded articles independently, and then came together to reach consensus on any discrepancies in their coding. Inter-rater agreement of 96% of was reached for initial coding. When discrepancies did arise, disagreements were discussed and resolved through discussion in a consensus meeting.

Description of Coding Schema

A brief description of the major coding categories is presented below, including mutual trust, related variables, and moderators of these relationships. Sample size, number of teams,

sample and team characteristics, and measure reliabilities were also incorporated when available. Appendices provide a summary of the coding and the coding categories as supplementary materials.

Coding of Mutual Trust

Trust at the team-level can be defined as a "shared psychological state among team members comprising willingness to accept vulnerability based on positive expectations of a specific other or others" (Fulmer & Gelfand, 2012, p. 1174). Variables were coded if the study included trust/willingness to be vulnerable/positive expectations within the team. It is common for team studies to adapt interpersonal measures such as McAllister (1995) interpersonal trust and change the referent to the *team*. A sample item of a trust measure at the team-level includes "Members of our team follow through on their commitment to one another" (Chang, Sy, & Choi, 2012). Below, the categorization of the three measurement components of mutual trust is explained in detail.

Definitions of Trust

The definition of trust greatly varies from study to study. In order to capture the item content of measures of mutual trust (i.e., positive expectations, willingness to be vulnerable, etc.), the classification of how studies operationalized trust at the team-level was considered. The categorization of studies into those categories relied on previously established categorizations (e.g., Colquitt et al., 2007; Dirks & Ferrin, 2002). More specifically, the general measures are the most inclusive ones that contain all three components that were then compared to the more specific measures that either only assesses positive expectations, willingness to be vulnerable or direct measures.

Dimensionality of Trust

As aforementioned, the dimensionality of trust required further investigation. In order to

start parsing out the nuances about the dimensions of mutual trust, measures were categorized as

unidimensional (e.g., when there is only one overarching factor, such as in Prichard & Ashleigh,

2007) or multidimensional (e.g., three-factor model: calculus-based, knowledge-based,

identification-based trust, such as in Lewicki & Bunker, 1995).

Referent of Trust

When dealing with constructs at the team-level, it is common for researchers to change

the referent from "I" to "we" in order to get at the perception of the aggregate. This is actually

the approach recommended by Chan (1998) when dealing with team-level constructs. To address

our referent hypothesis, I categorized the articles depending on whether the self-report measures

had "I" (e.g., I trust my teammates), "we" (e.g., we can rely on each other), or "mixed" (e.g.,

when referent varied from item to item) item sources.

<u>Coding of Diversity</u>

Diversity is broadly defined as the existing differences across individual's attributes,

which then makes diversity a collective-level construct (Ferdman & Sagiv, 2012). The way in

which these attributes are combined can vary (e.g., Euclidian distance, Tsui et al., 1992; Blau's

index, 1977; etc.). Indices comparing teammates in regards to their attributes were coded and

further categorized into surface-level or deep-level categories.

Type of Diversity

For surface-level, I included age, gender, and race/ethnicity (Bell et al., 2011; Harrison et

al., 2002; Mohammed & Angel, 2004). Less readily available categories (i.e., deep-level

diversity) included values (Bell, 2007; Harrison et al., 2002), educational, and functional

diversity. The inclusion for the last two under deep-level is based on the potential inaccessibility of this information, at least in comparison to other surface-level categories (e.g., age, gender, and race). Effect size signs were reversed when homogeneity or another type of similarity was included instead of diversity. Team familiarity served as the operationalization of time for each study. Following other diversity and teams researchers (e.g., Joshi & Rho, 2009; Salas, DiazGranados, Klein, Burke, Stagl, Goodwin, & Halpin, 2008), low familiarity teams reflect more ad hoc types of teams, often short-term, whereas high familiarity have higher team tenure in more intact types of teams, often long-term.

<u>Coding of Team Performance</u>

As noted, the criterion in this study was team performance. Team performance outcomes are combined, but also coded for specificities to determine differences when related to mutual trust. The types of outcomes included under the team performance umbrella are discussed below.

Type of Performance

For team performance, I limit this category for those measures that include task performance, completion of a task, and/or proficiency (e.g., DeChurch & Mesmer-Magnus, 2010). Going beyond the team's goal, efficiency encompasses not only the completion, but also the quality of team performance and/or product as others have included in their meta-analyses (e.g., Burke et al., 2006; Joshi & Rho, 2009). For efficiency, time and inputs are considered in addition to outputs (Beal et al., 2003). Furthermore, more distal performance outcomes (i.e., results) are codes, such as financial or operational measures (e.g., sales; Joshi & Rho, 2009). Lastly, I include creativity and innovation to broaden our outcomes within team performance (Bell et al., 2011).

<u>Contextual Moderators</u>

In addition to scrutinizing the characteristics of mutual trust, diversity and performance measures, I coded the context in which these effect sizes came from. The two contextual variables are study setting and team distribution, which will now be described in detail.

Study setting

This moderator has been used in other meta-analysis (e.g., Bell, 2007) for helping to parse out the contextual influence of the effect sizes found. I categorized studies that were conducted in a controlled setting as laboratory studies. Field studies were coded as such when teams were part of a real team (e.g., within organizations). Student samples are not as clear-cut when categorizing them, so it is important to clearly define where they lay. For the purposes of our meta-analysis, I categorized project teams that are together for a semester-long (e.g., MBA students) as a field sample due to its similarity in regards to consequences and limited options in terminating the study or not. This type of sample, similar to a work team, will have to deal with repercussions if they chose to contribute less than expected (e.g., this may affect their grade and reputation with classmates). In addition to making theoretical sense, results with MBA samples removed were not significantly different.

Team distribution

The distribution of the team is categorized as either co-located (i.e., almost of the team members are in the same geographic region) or distributed (i.e., most of the team members are dispersed and crossing geographic boundaries). The first category includes the more traditional type of teams, in which all members meet face-to-face. The second category includes the teams in which members communicate via virtual means. A third category can exist that includes studies with moderate levels of team distribution (e.g., correlation included conditions in which

members were distributes and others were co-located), but there were not enough of them to include in the moderating analysis ($k= 3$).

<p style="text-align:center">Analyses</p>

Analyses for the current study followed Hunter and Schmidt's (2004) meta-analytic procedures, which draw from a random-effects model and utilize a weighted mean estimate of the overall effect size, which takes into account the heterogeneity of studies including the various sample size. All effect sizes were corrected for unreliability in the trust measure and the diversity or performance measure. When multiple effect sizes were presented within a single sample, composites correlations were created (Nunnally, 1978). If the information required to calculate a composite was not available, the mean of the effect sizes were used. In cases where a composite or average is calculated, the reported reliability estimates were inserted in the Spearman-Brown formula in order to calculate the reliability of the combined measures. In cases where reliability estimates were not reported, the mean reliability of all studies included was input as the artifact distribution.

Trim-and-fill publication bias analyses (Duval & Tweedie, 2000) were conducted to ensure that inaccessibility of research was not driving our results. When inputting only published results, the analysis recommended trimming three studies for the diversity-trust relationship and nine for the trust-performance relationship. Fortunately, over 10 and 20 effect sizes were included in the overall meta-analytic review that came from unpublished sources, for each relationship, respectively.

In order to interpret the results, both 95% confidence intervals and 80% credibility intervals for each effect size were calculated. It is important to clarify the difference and

<p style="text-align:center">36</p>

underlying interpretation of each (cf. Whitener, 1990). The former can inform the extent to which a given effect size estimate is accurate or contains sampling error. It is required that the confidence interval does not include zero to say the estimated population mean effect size is significantly different from zero (Aguinis, Pierce, Bosco, Dalton, & Dalton, 2011). The latter interval, on the other hand, gives information about whether the range of values includes most of just part of the population. If there is a lot of variability and the interval includes zero, this is likely an indicator of moderators.

To test the mediation analysis, several steps were taken. First, the meta-analytic estimates from this study were calculated for each diversity category and mutual trust, followed by the mutual trust and team performance relationship. Second, I compiled previously established meta-analytic estimates for the diversity-performance relationship (Bell, 2007; Bell et al., 2011). Table 3.1 presents the meta-analytic correlation matrix. Third, these values with their respective harmonic means as the sample size were integrated as one model per diversity category in LISREL 8.8 (Jöreskog & Sorbom, 2006). To determine the significance of the indirect effects, the standardized coefficients and standard errors were then input using the Monte Carlo method for assessing mediation (Selig & Preacher, 2008). This procedure tests the null hypothesis that the indirect path from the diversity term to the trust does not significantly differ from zero. If the confidence intervals do not include zero, it can be concluded that the indirect effect is, in fact, different from zero at $p < .05$.

Table 3.1: Meta-Analytic Correlation Matrix

	Mutual trust	**Team performance**
1. **Age diversity**	**.12**	**-.03**[b]
k studies	9	40
N total observations	490	10953
2. **Gender diversity**	**-.03**	**-.06**[b]
k studies	18	38
N total observations	1477	6186
3. **Racial diversity**	**.02**	**-.11**[b]
k studies	5	31
N total observations	585	5298
4. **Value diversity**	**-.34**	**.25**[a]
k studies	5	14
N total observations	334	1299
5. **Functional diversity**	**.00**	**.10**[b]
k studies	8	31
N total observations	536	3726
6. **Educational diversity**	**.01**	**.01**[b]
k studies	7	13
N total observations	379	2629
7. **Mutual trust**	-	**.32**
k studies	-	95
N total observations	-	5812

Note. The subscripts indicate the source of the meta-analytic correlations, which are as follows: [a]Bell (2007), [b]Bell et al. (2011). All meta-analytic estimates that appear without a subscript are original analyses.

CHAPTER FOUR: RESULTS

Learning more about trust at the team-level is crucial for the understanding of what

influences trust as well as their consequences within the team context. More importantly, this

quantitative review compares and contrasts different conditions under which mutual trust

becomes more or less important. I will now present the meta-analytic findings of this study in

detail.

Trust and Diversity

The literature on diversity has compiled the impact of such amalgam of categories as

predictors of more distal outputs, such as team performance (e.g., Bell, 2007; Bell et al., 2011;

Horwitz & Horwitz, 2007). However, the relationship between diversity and team emerging

states, such as mutual trust, was still nascent. Table 4.1 presents the relationship of overall

diversity and trust ($\hat{\rho} = -.06$, $k= 35$, $N= 2633$, 95%CI: -.12, .01), along with the breakdown of

categories to detect its nuances. Because the confidence intervals included 0, I cannot consider

the diversity-trust relationship to be statistically negative. The non-significant relationship

between diversity and trust does not indicate they are not indeed related. This finding is

consistent with previous meta-analyses (e.g., Joshi & Roh, 2009; Webber & Donahue, 2001),

which then provides further evidence for the necessity to conduct separate analysis depending on

the diversity category type. Hypotheses 1a-c then proposed that surface-level diversity would be

negatively related to trust. As shown in Table 4.1, none of the surface-level variables (e.g., age,

gender, racial diversity) were statistically different from 0 when relating them to trust at the

team-level. Thus, surface-level diversity was not related to mutual trust ($\hat{\rho} = .02$, $k= 22$, $N=$

1751, 95%CI: -.05, .09), providing no support for hypothesis 1. Interestingly, age diversity

shows the trend to be mostly positive as contrary to the other surface-level diversity categories.

Furthermore, deep-level categories were examined in light of the potential benefits of

education and functional diversity. Hypotheses 2a-c proposed that values diversity would be

negatively related to trust, but functional and educational diversity would be positively related to

trust. First and foremost, there is a negative main effect for overall deep-level diversity and

mutual trust ($\hat{\rho}$ = -.12, k= 23, N= 1597, 95%CI: -.20, -.02). As suggested by hypothesis 2a,

value diversity showed a significantly negative relationship to trust, $\hat{\rho}$ = -.34 [95%CI= -.56,-.06].

However, the positive link hypothesized was not found for the remaining deep-level diversity

categories. Functional and educational diversity did not show the expected positive relationship,

$\hat{\rho}$ =.00; .01 [95%CI= -.13,.13; -.10,.12] respectively. This can be an indication that diversity in

regards to education and functional background is not as detrimental as diversity in value

systems to trust development in teams.

Table 4.1: Meta-Analytic Summary of Diversity and Trust

	k	N	r	$\hat{\rho}$	SDρ	95% CI$_L$	95% CI$_U$	80% CV$_L$	80% CV$_U$
Diversity	35	2633	-.06	-.06	.17	-.12	.01	-.28	.16
Surface-level Diversity	22	1751	.02	.02	.14	-.05	.09	-.15	.20
Age diversity	9	490	.11	.12	.15	-.02	.24	-.08	.32
Gender diversity	18	1477	-.02	-.03	.08	-.08	.04	-.13	.08
Racial diversity	5	585	.02	.02	.00	-.04	.09	.02	.02
Deep-level Diversity	23	1597	-.11	-.12	.21	-.20	-.02	-.39	.15
Value diversity	5	334	-.31	-.34	.28	-.56	-.06	-.70	.02
Functional diversity	8	536	.00	.00	.15	-.13	.13	-.19	.19
Educational diversity	7	379	.01	.01	.07	-.10	.12	-.07	.10

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

In order to start understanding the diversity-trust relationship, hypothesis 3 proposed that

surface-level diversity would have a stronger relationship with trust than deep-level diversity

earlier on, whereas deep-level diversity would have a stronger relationship with trust than surface-level diversity in later phases of team development. Even though deep-level diversity seemed to have a stronger relationship with trust, $\hat{\rho} = -.12$ [95%CI= -.20, -.02], than surface-level diversity, $\hat{\rho} = .02$ [95%CI= -.05,.09], the overlapping confidence intervals do not let us make the inference that they are indeed statistically different from one another when time was not taken into account. Considering the influence of diversity over time (e.g., Harrison et al., 2001), I included whether the team has a shared history with the other team members or not. Accordingly, team member stability was used to determine whether surface-level becomes less important as deep-level diversity becomes more important over time (see Table 4.2 for details). Along these lines, surface-level diversity was negatively related to trust in low familiarity teams, $\hat{\rho} = -.16$ [95%CI= -.29,-.03], whereas it had a positive impact in high familiarity teams, $\hat{\rho} = .11$ [95%CI= .08,.13]. Similarly, deep-level diversity was only negatively related in high familiarity, $\hat{\rho} = -.30$ [95%CI= -.46,-.03]. This shows that beyond looking at values in a static manner, the time component adds another level of complexity to the diversity-trust relationship. Thus, hypothesis 3 was supported. However, it is important to interpret these results with caution due to small number of studies in each moderator level.

Table 4.2: Meta-Analytic Summary of the Role of Time to the Diversity-Trust Relationship

	k	N	r	$\hat{\rho}$	SDρ	95% CI$_L$	95% CI$_U$	80% CV$_L$	80% CV$_U$
Team Familiarity									
Low Familiarity									
· Surface-level	4	165	-.16	-.16	.00	-.29	-.03	-.16	-.16
· Deep-level	5	431	-.06	-.06	.11	-.19	.07	-.20	.07
High Familiarity									
· Surface-level	2	50	.11	.11	.00	.08	.13	.11	.11
· Deep-level	5	405	-.28	-.30	.19	-.46	-.10	-.05	-.55

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

<div style="text-align:center">Trust and Performance</div>

As a core emergent state that often proceeds team performance in the literature,

hypothesis 4 proposed that trust would be positively related to team performance. Accordingly,

trust indeed showed a significantly positive relationship to performance ($\hat{\rho}$ = .32, k= 95, N=

5721, 95%CI: .24, .33), as depicted in Table 4.3. The failsafe k is 3539, which suggest that it

would take at least this amount of file-drawer null effects to turn this positive trust-performance

relationship into a non-significant one. Thus, hypothesis 4 was supported. Furthermore, an

exploratory analysis helped to parse out team performance to consider its nuances, for instance

whether the criterion takes inputs into account (e.g., efficiency) or not. Even though not

hypothesized, our data showed important differences regarding the type of performance

measurement. More specifically, trust seems to be more influential when the outcome is

creativity, $\hat{\rho}$ = .55 [95%CI=.35,.61], than results, such as ROE and market success, $\hat{\rho}$ = .15

[95%CI=.04,.23]. This shows that not only trust matters to performance, but also the way the

criterion is operationalized will influence the strength of the relationship.

Table 4.3: Meta-Analytic Summary of Trust and Performance

	k	N	r	$\hat{\rho}$	$SD\rho$	95% CI_L	95% CI_U	80% CV_L	80% CV_U
Team performance	95	5721	.29	.32	.19	.24	.33	.08	.57
Creativity	7	393	.48	.55	.16	.35	.61	.35	.75
Effectiveness	43	2759	.32	.37	.20	.26	.39	.12	.63
Goal completion	31	1812	.23	.26	.16	.16	.30	.05	.47
Efficiency	10	486	.26	.29	.15	.14	.38	.09	.48
Results	10	694	.14	.15	.10	.04	.23	.02	.28

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

<center>Underlying Mechanisms</center>

In addition to the main effects regarding the extent to which diversity and performance relate to trust, this research aims to shed light on the underlying mechanisms that influence the aforementioned relationships. First, hypothesis 5 proposed trust as the mediator of the diversity-trust relationship. In order to test this hypothesis, the meditational models in Figure 4.1 were estimated with meta-analytic structural equation modeling and the indirect effects of diversity onto team performance were tested with a 95% Monte Carlo confidence interval for each of the diversity types: (a) age, (b) gender, (c) race, (d) value, (e) function, and (f) education. Results suggest that trust partially mediated the relationship of age (95%CI: .03, .05), gender (95%CI: -.02, -.002), value (95%CI: -.18, -.14), and functional (95%CI: .14, .18) diversity with team performance as the direct effects were significant and the confidence intervals were significantly different from zero. Interestingly, age –albeit the small effect– and value diversity show a suppressor effect in which the relationship to team performance has a different direction as the one presented with the mediator mutual trust. Contrary to our hypothesis 5, neither racial diversity (95%CI: -.003, .02) nor educational diversity (95%CI: -.003, .01) seemed to be mediated by trust, especially without a significant relationship to trust (i.e., the *a* path). With that being said, hypothesis 5 was partially supported due to significant indirect effects for most diversity categories onto performance through trust.

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(a)

Age diversity → Team performance: -.07*
Age diversity → Trust: .12*
Trust → Team performance: .33*

(b)

Gender diversity → Team performance: -.05*
Gender diversity → Trust: -.03*
Trust → Team performance: .32*

(c)

Racial diversity → Team performance: -.11*
Racial diversity → Trust: -.03
Trust → Team performance: .32*

(d)

Value diversity → Team performance: .41*
Value diversity → Trust: -.34*
Trust → Team performance: .46*

(e)

Function diversity → Team performance: .10*
Function diversity → Trust: .50*
Trust → Team performance: .32*

(f)

Education diversity → Team performance: .01
Education diversity → Trust: .01
Trust → Team performance: .32*

Note. Standardized estimates. The value on the left of the slash denotes the indirect effect, and the value on the right denotes the direct effect when it applies. *$p<.05$

Figure 4.1: Test of mediating role of trust

Moderator Analyses

Hypotheses 6-9 dealt with the interactive effect of contextual and measurement components to the aforementioned relationships. Hypotheses 6a and 6b proposed that the relationships with trust would be strengthen when study sample was field rather than laboratory

teams. As Table 4.4 shows, both the diversity-trust as well as trust-performance relationships

seemed to be generalizable across study settings instead of stronger in a given study setting.

Even though the trust-performance relationship seemed to be stronger within field settings, $\hat{\rho} =$

.34 [95%CI= .25, .34], than in laboratory settings, $\hat{\rho} = .17$ [95%CI= .04,.28], the overlapping

confidence intervals do not let us make the inference that they are indeed statistically different. It

is important to highlight the amount of studies current available that investigate the diversity-

trust within laboratories (k=4) is very limited. Consequently, hypotheses 6a and 6b were not

supported.

Table 4.4: Moderator Analysis of Contextual Issues

	k	N	r	$\hat{\rho}$	SDρ	95% CI$_L$	95% CI$_U$	80% CV$_L$	80% CV$_U$
Study Setting									
Diversity-Trust									
Laboratory	4	163	-.03	-.03	.00	-.11	.05	-.03	-.03
Field	31	2470	-.06	-.07	.18	-.13	.01	-.30	.17
Trust-Performance									
Laboratory	9	379	.16	.17	.10	.04	.28	.04	.31
Field	86	5342	.29	.34	.19	.25	.34	.09	.58
Team Distribution									
Diversity-Trust									
Co-located	21	1770	-.05	-.05	.12	-.11	.02	-.21	.11
Distributed	7	356	-.11	-.12	.26	-.32	.10	-.45	.22
Trust-Performance									
Co-located	54	3090	.27	.30	.20	.21	.32	.04	.55
Distributed	15	792	.34	.39	.20	.23	.46	.13	.64

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

Regarding the types of teams, hypotheses 7a and 7b proposed team distribution had

divergent impact on the trust relationship. More specifically, it proposed co-located teams would

have higher diversity-trust relationship and at the same time lower trust-performance relationship

in comparison to distributed teams. As depicted in Table 4.4, diversity did not seem to be

significantly related to trust in neither co-located, $\hat{\rho} = -.05$ [95%CI= -.11,.02], or distributed

teams, $\hat{\rho} = -.11$ [95%CI= -.32,.10]. Hence, hypothesis 7a was not supported. Similarly, even

though the trust-performance relationship seemed to be stronger within distributed teams, $\hat{\rho} =.39$

[95%CI= .23, .46], than in laboratory settings, $\hat{\rho} = .30$ [95%CI= .21,.32], the overlapping

confidence intervals do not let me make the inference that they are indeed statistically different

from each other. Consequently, hypotheses 7b was not supported.

<div align="center">Trust Measurement</div>

Lastly, this meta-analysis compiles some of the issues with the measurement of trust.

Table 4.5 summarizes these findings, divided by relationship and measurement topics.

Hypothesis 8 suggested that affective and cognitive measures, respectively, would be stronger

for the diversity-trust and trust-performance relationships. Even though affective measures of

trust seemed to have a stronger relationship between diversity and mutual trust, $\hat{\rho} = -.18$

[95%CI= -.21, -.11], than cognitive, $\hat{\rho} = -.08$ [95%CI= -.19,.06], or behavioral measures, $\hat{\rho} = .01$

[95%CI= -.19,.122], the overlapping confidence intervals do not let us make the inference that

they are indeed statistically different. Similarly, cognitive measures of trust did not appear to be

statistically more impactful in the trust-performance relationship, $\hat{\rho} = .33$ [95%CI= .22, .37],

when compared against affective, $\hat{\rho} = .30$ [95%CI= .17, .35], and behavioral measures of

mutual trust, $\hat{\rho} = .26$ [95%CI= .11, .33]. Therefore, hypothesis 8 was not supported, but

interesting findings emerged from the different dimensions of trust.

Another topic for a wide variability is the referent used in trust surveys. Accordingly,

hypothesis 9 proposed that drawing from the referent shift to "we" recommended by Chan

(1998) would lead to stronger relationship than utilizing "I" or a mixture of reference sources in

both diversity-trust and trust-performance links. Even though measures that used referent of

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"we" seemed to have a stronger relationship between diversity and trust, $\hat{\rho} = -.12$ [95%CI= -.20, -.03], than measures that used "I," $\hat{\rho} = -.06$ [95%CI= -.17,.07], or both, $\hat{\rho} = -.05$ [95%CI= -.19,.10], the overlapping confidence intervals do not let us make the inference that they are indeed statistically different. Thus, hypotheses 9a was not supported. Contrary to our hypothesis 9b, findings regarding the trust and performance relationship were not statistically different regardless if the measurement source was "I," "we," or a mixture of the referent sources. Similarly, hypothesis 9 was not supported.

Table 4.5: Moderator Analysis of Measurement Issues

	k	N	r	$\hat{\rho}$	SDρ	95% CI$_L$	95% CI$_U$	80% CV$_L$	80% CV$_U$
Dimensionality									
Diversity-Trust									
Cognitive	3	259	-.06	-.08	.00	-.19	.06	-.08	-.08
Affective	4	405	-.16	-.18	.00	-.21	-.11	-.18	-.18
Behavioral	3	229	.01	.01	.15	-.19	.22	-.17	.20
Trust-Performance									
Cognitive	25	1302	.29	.33	.15	.22	.37	.13	.53
Affective	21	1446	.26	.30	.20	.17	.35	.05	.55
Behavioral	9	661	.22	.26	.13	.11	.33	.09	.43
Measurement Source									
Diversity-Trust									
"I"	8	653	-.05	-.06	.14	-.17	.07	-.23	.12
"We"	16	1186	-.11	-.12	.13	-.20	-.03	-.29	.05
Trust-Performance									
"I"	21	1238	.28	.32	.14	.20	.35	.14	.50
"We"	36	2299	.28	.32	.19	.21	.35	.07	.57

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

Interestingly, trend analysis showed that measurement that has stronger relationships for diversity and trust include specific (i.e., willingness to be vulnerable), unidimensional, and using the referent shift "we" as measurement tool, whereas the relationship between trust and performance was strongest –although not significantly different– when trust measurement tool was more general, multidimensional, and had mixed referent sources. This warrants attention to

what variable one is relating trust to prior to choosing the proper measurement tool, but this will

be discussed in greater detail in the following section. A summary of the hypothesized

relationships and their findings is presented below in Table 4.6.

Table 4.6: Summary of Hypothesized Relationships and Findings

Hypotheses	Findings
• *H1:* Surface-level [i.e., (a) age, (b) gender, (c) racial] diversity is negatively related to mutual trust	Not supported
• *H2:* Deep-level [i.e., (a) value] diversity is negatively related to mutual trust, whereas more job-related deep-level [i.e., (b) functional, (c) educational] diversity is positively related to mutual trust	2a supported, 2b,2c not supported
• *H3:* Surface-level diversity shows a stronger relationship with mutual trust than deep-level diversity in teams of low familiarity, whereas deep-level diversity shows a stronger relationship with mutual trust than surface-level diversity in teams of high familiarity	Supported
• *H4:* Mutual trust is positively related to team performance	Supported
• *H5:* Mutual trust mediates the relationship between diversity and team performance	Partially supported
• *H6:* The relationship between (a) diversity and mutual trust, and (b) mutual trust and team performance is stronger in field (rather than laboratory) settings	Not supported
• *H7*: The relationship between (a) diversity and mutual trust is stronger when the team is co-located (rather than distributed), whereas the relationship between (b) mutual trust and team performance is stronger when the team is distributed (rather than co-located)	Not supported
• *H8*: The relationship between (a) diversity and mutual trust is stronger when the mutual trust measure is affective (rather than cognitive or behavioral), whereas the relationship between (b) mutual trust and team performance is stronger when the mutual trust measure is cognitive (rather than affective or behavioral)	Not supported
• *H9*: The relationship between (a) diversity and mutual trust, and (b) mutual trust and team performance is stronger when the source of measurement is "we" (rather than "I")	Not supported

CHAPTER FIVE: DISCUSSION

The purpose of this study was to address the role of trust on performance within teams, and more specifically, within diverse teams. Through meta-analysis, I provided an integration of current issues associated with the trust construct at the team-level, including interactive effects, antecedents (i.e., diversity), consequences (i.e., team performance), and its role as a mediator. First and foremost, I reiterate the importance of breaking diversity down into smaller categories, as one may misrepresent its influence on trust if only an overall diversity effect is taken into account. The inclusion of surface-level and deep-level diversity variables led to wide variability in results, ranging from -.34 to .12. Although the small number of independent samples in this study was insufficient to show the intricacies relevant to surface-level diversity variables, an examination of trends suggests that age diversity may have a positive impact on mutual trust. This serves as initial support for potential positive effects of surface-levels categories under the right circumstances, as found in a recent meta-analysis (Joshi & Roh, 2009). Accordingly, these findings discourage the use of over-simplistic thinking that any type of diversity that leads to social categorization will be detrimental. The relationship is far more complex than that, and I urge further research to try to understand the conditions under which diversity of both types may actually be positive for team performance.

Along these lines, some deep-level diversity variables have a stronger history of being beneficial to outcomes in comparison to surface-level variables when they are task-related (e.g., functional, Bantel & Jackson, 1989; Bell et al., 2011; educational, Dahlin et al., 2005; Kearney et al., 2009). However, our results did not support this thinking. It is important to contrast these types of diversity (i.e., functional, educational) with values diversity, which was extremely

negative for mutual trust, and is often lumped together under the umbrella of deep-level diversity categories. It can be deceiving when looking at the negative influence of deep-level diversity if one does not take into consideration whether the variables are task-related or not. In sum, this meta-analysis showed a moderate and negative correlation between value diversity and mutual trust, bringing attention to difficulties a team may face when members have divergent cultural values (e.g., individualism/collectivism, power distance, etc.) and must come together to perform collective tasks. When comparing the impact of deep-level versus surface-level diversity, a significant difference was not found without considering team familiarity. This brings attention to the importance of considering the interactive effect of time and type of diversity when one is interested in understanding the diversity-trust relationship.

Additionally, 95 independent samples involving 5,721 teams provide quantitative evidence for the importance of trust for team performance. With a moderate and positive relationship ($\hat{\rho} = .32$), mutual trust was crucial for all types of team performance, even more distant, organization-relevant financial outcomes (e.g., return of equity). This finding provides support for aspects of social exchange theory suggesting that trust is important for performance because it highlights team members' reciprocity, positive exchanges, and relationship emergence. Although mutual trust was related to a number of performance outcomes, this construct showed to be most influential for creativity. This can be worrisome, as teams comprised to generate creative outcomes are shifting to a more diverse pool of members in order increase the breadth of knowledge and ideas available, yet this study shows that diversity may threaten levels of mutual trust.

I have begun to answer calls from scholars —such as van Knippenberg and Schippers (2007)— by putting forth and testing a framework in which mutual trust serves as the underlying

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mechanism that drives the diversity-performance relationship. Adding to other studies that have already found diversity to be important for team performance (Bell, 2007; Bell et al., 2007), our investigation of the indirect effects of mutual trust showed age, gender, value, and functional diversity to be related to performance through this variable. Findings shed some light into the potential benefits of age and functional diversity to trust, which in turn can be associated with better performance. On the other hand, gender and value diversity were negatively associated to trust. However, this relationship also showed to be more complex than just a simple diversity leads to detriments in performance through the decrease of levels of mutual trust. Even though age diversity showed to be positively associated with mutual trust, it is still negatively related to team performance. It is understandable how divergent in age may impair performance as a whole, especially when it is a complex task (Wegge et al., 2008).

With that being said, this study has implications for the role of mutual trust not only as directly influencing team performance, but also as serving as a main emergent state that minimizes the negative consequences of diversity. Yet, variability in age may not enhance a high sense of uncertainty that is detrimental to trust. Along the same lines, values diversity was extremely harmful to mutual trust, but the opposite effect was found to team performance. It is important to highlight the inclusion of creativity and innovation as team performance. Others have found positive effect of diversity in cultural values on idea generation and creativity (McLeod et al., 1996; Stahl et al., 2010). These differences, however, are not likely to increase mutual trust, especially earlier on.

Furthermore, this study explores whether contextual (e.g., team distribution) as well as measurement (e.g., referent) issues pose systematic differences in the diversity-trust and trust-performance relationships. Surprisingly, the construct of trust at the team-level showed to be

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generalizable across a number of unique conditions. Most of the diversity-trust moderators were rending towards the hypothesized directions, but the amount of studies available was very limiting. With enough evidence, I am certain time (e.g., team familiarity) and context (e.g., field) will bring the importance of certain types of diversity to the development of trust to the forefront. On a more positive note, trust was related to team performance at all levels of moderators. Even though a number of moderators were considered, the relationship between trust and performance remained significantly positive. The lowest trust-performance correlation was .17 in laboratory settings, whereas the highest was .39 for distributed teams. On the one hand, the laboratory findings shows both a lack of studies in this type of settings ($k= 9$) whereas field studies are overly abundant ($k= 86$), showing that perhaps the little room for trust to develop in those controlled settings is discouraging researchers from developing more internally construct-valid studies. On the other hand, the growing concern regarding trust in virtual teams seems to be justifiable and likely to strengthen this correlation with more data.

This study also aimed to identify boundary conditions in which the relationship to trust will differ depending on measurement specifications. The small amount of studies shows the lack of power to detect systematic difference in the diversity-trust relationship. This calls for future research to strengthen the findings that more specific measurement (e.g., affective) and with the proper referent shift to "we" will be the most adequate to relate mutual trust to diversity. Furthermore, the large heterogeneity in the trust to performance effect sizes across multiple levels of moderators inhibited the emergence of statistically significant differences. It is important to note, though, that trust measures may need different specifications (e.g., cognitive dimension) when relating this variable to team performance. Even though this is based on trends,

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I urge researchers to consider the dimensions of mutual trust depending on which variables this is being related to.

<center>Theoretical Implications</center>

These meta-analytic findings shape a number of theoretical implications. First, this study shed some light regarding the discrepancies in whether diversity is beneficial, detrimental, or even indifferent to team processes and outcomes. Albeit the amount of studies that investigate the diversity-trust link is still small, this paper highlights the importance of some types of diversity (e.g., value diversity) and the timing of measurement (e.g., long-term teams). Moving past the static question whether diversity matter, this study suggests looking at what type of diversity and when they become more important to trust as suggested by previous researchers (e.g., Harrison et al., 1998). In general, these diversity findings show that delineating the specific diversity category of interest as well as the team familiarity can be crucial components to understand the impact of these dissimilarities in the development of trust at the team-level.

Furthermore, placing mutual trust as an explanatory mechanism between diversity and trust starts to get at *how* diversity influences outcomes (Joshi & Roh, 2009; van Knippenberg & Schippers, 2007). This study suggests that mutual trust partially mediates the impact of age, gender, value and functional diversity onto team performance, but some of these relationships show distinct idiosyncrasies (e.g., suppressor effect) and other types of diversity (e.g., race) was not mediated by trust. As the first meta-analysis to attempt to place mutual trust as a mediator of diversity-trust relationship, I recognize this is by no means the only possible explanatory mechanism for the "black box." Future research should investigate other mediators, such as conflict (e.g., relationship conflict) and cognition (e.g., transactive memory systems). For the

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diversity-trust relationship, there is a need for additional studies, and greater consideration of multiple types of diversity.

More impactful, this study shows the relationship between mutual trust and performance. This study shows that the speculation of trust as an important emergent state in teams is not without reason. In this analysis, I distinguished the different performance outcomes. Once again, lumping different types of indicators of performance can provide a story that overlooks nuances. The potential differences, for instance between creativity and financial performance, may be a topic that future research should explore. The use of process or behavioral measures of performance rather than more outcome-based measures can greatly change the intensity, albeit not the direction, of the impact of trust onto performance.

Accordingly, the compilation of empirical evidence show that this moderate and significantly positive relationship between trust and performance occurs across contexts. Even though the relationships with trust did not seem to significantly differ depending on study setting, team distribution, and measurement details, these are not the only potential moderators. Additional moderators of the relationships I examined should also be considered. As Joshi and Roh (2009) found occupational demography, industry setting, team interdependence, and team type to moderate the diversity-performance link, it is likely that similar patterns can be found when relating diversity to a more proximal construct, such as mutual trust. For the trust-performance relationship, further exploration of the heterogeneity in those effect sizes is needed. On that note, diversity, trust, and performance have all been operationalized in a number of ways, and a closer examination of how these differences can influence relationships is warranted.

In addition to advancing the science, our meta-analytic review has several implications for real-world practices. First, findings suggest that diversity categories should be evaluated, and targeted in interventions separately. Despite the common practice of lumping different types of diversity under an overarching term (e.g., diverse or homogeneous team), our results suggest the use of more specific diversity categories. When age, race, gender, values, functional, and educational diversity are considered part of diversity, this umbrella term has little to none predictive power for mutual trust. Practices that are tailored to the appropriate type of diversity will not only be more informative, but also more accurate. For instance, the reduction of categorization when teams are gender diverse may improve mutual trust, whereas age diversity may be something that leaders may want to bring up as a positive characteristic of their team composition. Consequently, considering diversity categories separately can help identify appropriate ways to diminish any negative consequence that some types of diversity may have.

Second, findings suggest that values diversity should be navigated with caution in practice. Results clearly demonstrate a negative influence of value diversity on mutual trust. Compared to all other categories, value diversity was the only negative diversity category significantly related to mutual trust. This suggests that practitioners managing culturally diverse teams should focus on developing trust between dissimilar others through other mechanisms, and should be prepared to frame conflict in a positive manner. Diversity research has uncovered some techniques, such as focusing on a common ingroup identity model (Gaertner, Mann, Murrell, & Dovidio, 1989; Gaertner & Dovidio, 2000), which can help bring people together albeit their divergent thinking through the mitigation of bias. The assessment of value differences

can signal potential for mutual team issues. Hence, practitioners should be ready to intervene in order to improve trust when team members vary in regards to their value system.

Third, this study provides evidence that focusing on mutual trust is a worthwhile investment for improving team performance. This study delineates the relationship between trust and team performance, showing that trust is equally, if not more important than other emergent states that have been examined previously. Specifically, team cohesion (Beal et al., 2003), efficacy (Gully et al., 2002), cognition (DeChurch & Mesmer-Magnus, 2010), and conflict (de Wit et al., 2012; DeDreu & Weingart, 2003) have all been meta-analyzed in relation to performance, with effect sizes ranging from -.23 to .38. Through our meta-analysis, I now also show the contribution of mutual trust to team performance of .32 as well as its generalizability across different team development and team performance contexts. If the performance of a team is hurting, savvy practitioners should then assess mutual trust in order to remedy the situation, at least in part.

Additionally, our review indicates that team diversity should be monitored and manipulated where possible, as a means of shaping mutual trust and performance. The development of trust is an avenue for improving diverse teams' performance, but as the mediation model suggests, the levels and types of diversity in the team can influence mutual trust. This finding can inform practitioners about how to compose their teams with levels of diversity that are not detrimental to mutual trust (e.g., educational diversity), or at least make them aware of trust drawbacks that can later influence team performance. In other words, showing that trust is a meaningful mediator of the diversity-performance relationship sheds light on the underlying mechanisms that make diverse team functioning challenging, and helps answer calls about the "black box" between diversity and team outcomes (van Knippenberg &

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Schippers, 2007) that has made practical interventions difficult. Knowing that value diversity can be detrimental to mutual trust, but can have a significantly positive indirect effect ($\beta = .41$) on team performance should encourage practitioners to invest in interventions that increase mutual trust. Thus, monitoring team diversity can help boost not only mutual trust, but also team performance as whole.

Furthermore, findings suggest that the type of diversity practitioners focus on should be dependent upon the team's level of familiarity. This study shows that the type of diversity will influence trust in teams differently at different levels of familiarity. Specifically, surface-level diversity seems to be the only concern at early stages of the team lifespan, which is consistent with Harrison and colleagues (1998), who noted these effects decreased over time, while deep-level diversity became increasingly detrimental. This study further supported this, but also showed that surface-level diversity can even beneficial after teams work together for long enough. Watson, Kumar, and Michaelson (1993) showed how racially diverse teams underperformed homogeneous teams in the beginning, but ended up surpassing them over time. Integrating these findings, practitioners should know that surface-level diverse teams may have a certain disadvantage, thus should make an effort to facilitate the benefits of this type of diversity, particularly over time. In parallel, assessing deep-level diversity at the early stages is recommended. Even though research shows these variables may not be very detrimental at first, they can lead to a number of issues as teams develop, including a reduction in trust and subsequent process loss. With that information ahead of time, management can come up with preventive conflict management strategies and team building exercises. Destroying trust is a lot easier than building it (Colquitt et al., 2012). Thus, pre-emptive measures for teams with high levels of deep-level diversity are a more efficient way than to remedy the negative consequences.

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Finally, this study proposes that managers should avoid a "one-size fits all" approach in regards to their trust measurement. The trend analysis of the measurement moderators led to different focus pending whether trust was being related to diversity or performance. Fortunately, there is a wealth of available trust measures to choose from (see McEvily & Tortoriello, 2011, for a collection). Depending on the construct of interest, dimensions of trust measures may vary (e.g., affective for diversity, cognitive for performance, etc.). Consequently, tailor the trust measure to be compatible to the variable of interest in order to obtain better results.

Limitations

This study is not without limitations. The issue of causality exists since I included all studies that examine diversity-trust and trust-performance, regardless of the direction and/or control of time across these variables. Research can gain from lagged measures of trust to really understand how this construct is developed, violated, and rebuilt in different types of teams. Another limitation is the amount of information available in each article. For instance, the measures are sometimes not fully described in the methods section that constrained the inclusion of some studies in moderator analysis (e.g., lack of item description to categorize their performance as efficiency or effectiveness). Additionally, the mediation test included weighted sample means from different meta-analyses for the diversity-performance link. It is possible that the conceptualizations of diversity could have slightly differed across the meta-analyses (e.g., sports teams were not included in Bell et al., 2011). It is possible that expanding the searches to include diversity-performance articles up to date can introduce more articles and better confidence in this study's findings.

Last but not least, these findings pertain to trust at the team-level, thus the dyadic exchanges or other levels of analysis (e.g., organizational trust) were not incorporated into this study. Conclusions are strictly relevant to team-level, but future investigation, when independent sample size permits, can include more forward thinking that captures the nuances of each dyadic relationship in a team. Specifically, the actor-partner independent model already includes the effect of one's trust on the other person's outcome (Kenny, Kashy, & Cook, 2006). Yakovleva, Reilly, and Werko (2010) were the first to use this model when looking at trust, but data lacked in independence of dyads, and the study was cross-sectional. In sum, these findings are associated mostly with traditional self-report measures of trust that are aggregated to the team-level. I urge future research to continue to validate current measures as well as to think of innovative ways (e.g., group actor-partner interdependence model; Kenny & Garcia, 2012) to assess trust within teams.

CHAPTER SIX: CONCLUSION

This meta-analysis provided an integration of current issues associated with the construct of trust at the team level of analysis. Diversity, in many cases, was not as detrimental as initially thought. Values diversity was the only statistically negative diversity category that can pose a real threat to the development and maintenance of trust team settings. These results make progress toward merging the diversity and teams literatures, and identifying the power of trust as a mediating mechanism. Age, gender, value, and functional diversity seem to influence performance through mutual trust. Further, mutual trust showed its importance when relating it to performance, and this effect was generalizable across a number of unique conditions. Trust was related to team performance at all levels of moderators, including creativity, effectiveness, and distal financial outcomes. Considering the gaps in the literature that still remain, research on this construct at the team-level is a ripe topic for further exploration. In addition to quantitatively reviewing the literature, implications and future research were discussed.

APPENDIX A: SUMMARY OF CODING

Diversity-Trust Relationship

Study	N	r_{xx}	r_{yy}	Diversity type	Trust measure	Study setting	Team distribution	r
Barczak et al., 2010	82	1.00	0.94	Deep	G/m	Field	Co-located	-0.08
Blatt, 2009	46	1.00	0.95	Deep	G/m	Field	-	-0.12
Brahm & Kunze, 2012	50	1.00	0.87	Mixed	G/W	Field	Distributed	-0.12
Camelo-Ordaz et al., 2014	64	0.87	0.71	Deep	C/W	Field	-	-0.25
Chen, 2014	225	1.00	0.97	Surface	G/m	Field	Co-located	0.13
Choi & Cho, 2011	74	0.99	0.92	Mixed	G/W	Field	Co-located	-0.53
Crisp & Jarvenpaa, 2013	68	1.00	0.93	Surface	G/W	Field	Distributed	-0.24
Curşeu & Schruijer, 2010	174	1.00	0.75	Mixed	A/I	Field	Co-located	-0.17
Dayan et al., 2012	103	(0.98)	0.90	Mixed	G/m	Field	-	0.34
Dooley, 1996	86	1.00	0.94	Mixed	B/W	Field	Co-located	0.01
Friedlander, 1966	11	1.00	(0.88)	Deep	G/W	Field	Co-located	-0.11
Fulmer, 2012	105	1.00	0.90	Surface	C/I	Field	Co-located	-0.13
Greer et al., 2007	60	1.00	0.85	Mixed	G/I	Field	Co-located	-0.01
Greer et al., 2007	28	1.00	0.97	Mixed	G/I	Field	Co-located	-0.25
Khan et al., 2014	44	0.65	0.88	Deep	A/m	Field	-	-0.29
Krebs et al., 2006	25	1.00	0.96	Mixed	G/m	Lab	Co-located	-0.20
Krebs et al., 2006	25	1.00	0.96	Mixed	G/m	Lab	Distributed	0.05
Leslie, 2007	121	1.00	0.95	Surface	G/W	Field	Co-located	-0.03
Li, 2013	113	0.77	0.73	Deep	C/W	Field	Co-located	0.01
Liu et al., 2014	138	1.00	0.81	Surface	G/W	Field	Co-located	0.05
MacCurtain et al., 2008	39	1.00	0.81	Mixed	B/I	Field	Co-located	0.39
Mishra, 1992	91	1.00	0.95	Mixed	G/W	Field	Co-located	0.01
Mockaitis et al., 2009	59	1.00	0.84	Mixed	-/-	Field	Distributed	0.20
Muethel et al., 2012	80	1.00	0.82	Mixed	G/-	Field	Mixed	-0.01
Pinjani & Palvia, 2013	58	0.93	0.89	Deep	G/W	Field	Distributed	-0.24
Polzer et al., 2006	45	1.00	0.90	Mixed	G/I	Field	Distributed	0.32
Rau, 2001	111	1.00	0.85	Mixed	G/m	Field	Co-located	-0.21
Rispens et al., 2007	27	1.00	0.89	Surface	G/W	Field	Co- located	-0.32

Roberge, 2007	47	1.00	(0.88)	Surface	G/m	Lab	Co-located	0.019
Simons, 1993	55	1.00	0.76	Deep	G/W	Field	Co-located	-0.03
Small & Rentsch, 2010	60	1.00	0.86	Surface	G/I	Field	Co-located	0.04
Wells, 2006	51	0.97	0.92	Deep	G/m	Field	Distributed	-0.58
Zheng, 2012	98	1.00	0.91	Mixed	G/I	Field	Co-located	0.01
Zolin et al., 2004	104	1.00	0.93	Deep	G/m	Field	Mixed	-0.28
Zornoza et al., 2009	66	1.00	0.80	Surface	-/W	Lab	Mixed	-0.03

Note. Reliabilities under parentheses were input based on average reliabilities per analysis; Surface= Surface-level diversity; Deep= Deep-level diversity; G= Global; C= Cognitive; A= Affective; B= Behavioral; U= Unidimensional; M= Multidimensional; I= Referent "I;" W= Referent "We;" m= Referent mixed.

Trust-Performance Relationship

Study	N	r_{xx}	r_{yy}	Performance measure	Trust measure	Study setting	Team distribution	r
Akgün et al., 2007	53	0.94	0.80	Goal comp.	G/U/m	Field	-	0.43
Akgün et al., 2014	129	0.93	0.87	Effectiveness	A/U/m	Field	Co-located	0.30
Barczak et al., 2010	82	0.95	0.94	Creativity	G/M/m	Field	Co-located	0.54
Bijlsma-Frankema et al., 2008	57	(0.92)	(0.88)	Effectiveness	B/U/I	Field	Co-located	0.30
Blatt, 2009	46	0.89	0.95	Creativity	G/U/m	Field	-	0.48
Boies et al., 2010	49	1.00	0.91	Effectiveness	G/U/m	Field	Co-located	0.11
Brahm & Kunze, 2012	50	0.97	0.87	Effectiveness	G/U/W	Field	Distributed	0.59
Braun et al., 2013	28	1.00	0.80	Goal comp.	-/U/-	Field	Co-located	0.15
Bresnahan, 2009	49	(0.92)	0.82	Goal comp.	G/M/W	Field	Co-located	-0.02
Camelo-Ordaz et al., 2014	64	1.00	0.71	Goal comp.	C/U/W	Field	-	0.13
Carmeli et al., 2012	77	0.96	0.86	Goal comp.	G/U/W	Field	Co-located	0.25
Chang et al., 2012	91	0.81	0.79	Goal comp.	C/U/I	Field	Co-located	0.54
Chen & Wang, 2008	112	1.00	0.84	Distal	A/U/W	Field	-	0.04
Chen et al., 2006	14	(0.92)	0.91	Effectiveness	G/U/m	Field	Distributed	0.77
Chen et al., 2008	54	0.82	0.83	Creativity	G/U/W	Field	-	0.62
Chieh & FengChia, 2012	65	0.80	0.83	Goal comp.	G/U/W	Field	Distributed	0.59
Chou et al., 2013	39	0.94	0.85	Effectiveness	C/U/m	Field	-	0.58
Chuang et al., 2004	64	0.94	0.92	Effectiveness	G/M/W	Field	Co-located	0.44
Chung & Jackson, 2013	58	1.00	0.88	Goal comp.	B/U/-	Field	Co-located	-0.10

Study	N	r_{xx}	r_{yy}	Performance measure	Trust measure	Study setting	Team distribution	r
Cogliser et al., 2012	71	(0.92)	0.88	Goal comp.	G/U/W	Field	Distributed	0.06
Costa et al., 2001	112	0.75	0.87	Goal comp.	-	Field	-	0.03
Costa et al., 2009	79	(0.92)	(0.88)	Effectiveness	G/M/m	Field	Co-located	0.18
Crisp & Jarvenpaa, 2013	68	0.79	0.93	Goal comp.	G/U/W	Field	Distributed	0.50
Curşeu & Schruijer, 2010	174	(0.92)	0.75	Goal comp.	A/U/I	Field	Co-located	0.47
Danganan, 2001	24	(0.92)	(0.88)	Goal comp.	B/U/W	Field	Co- located	0.53
Dayan et al., 2012	103	0.86	0.90	Efficiency	G/U/m	Field	-	0.50
De Jong & Dirks, 2012	67	(0.92)	(0.88)	Goal comp.	G/U/I	Field	Co- located	0.42
De Jong & Dirks, 2012	41	0.95	0.81	Goal comp.	G/U/I	Field	Co- located	0.33
de Jong & Elfring, 2010	73	0.87	0.91	Goal comp.	C/U/I	Field	Co-located	0.30
DeLuca, 1981	24	(0.92)	(0.88)	Goal comp.	G/U/-	Field	Co- located	0.41
Dirks, 1999	42	1.00	0.98	Goal comp.	G/U/m	Lab	Co-located	-0.15
Dirks, 2000	30	1.00	0.96	Effectiveness	G/M/m	Field	Co- located	0.31
Dooley, 1996	86	0.93	0.94	Goal comp.	B/M/W	Field	Co- located	0.24
Druskat & Pescosolido, 2006	16	1.00	0.73	Effectiveness	C/U/m	Field	Co-located	0.48
Edinger, 2012	38	0.74	(0.88)	Creativity	B/U/-	Field	Co-located	0.26
Erdem & Ozen, 2003	50	(0.92)	0.80	Goal comp.	G/M/W	Field	-	0.53
Greer et al., 2007	60	1.00	0.85	Goal comp.	G/U/I	Field	Co-located	0.04
Greer et al., 2007	28	(0.92)	0.97	Effectiveness	G/U/I	Field	Co-located	-0.05
Gupta et al., 2011	28	1.00	(0.88)	Efficiency	G/U/W	Field	-	0.17
Hakonen & Lipponen, 2009	31	0.73	0.94	Effectiveness	G/U/W	Field	Distributed	0.70
Harvey, 2010	31	0.84	0.95	Effectiveness	G/U/W	Field	-	0.73

Study	N	r_{xx}	r_{yy}	Performance measure	Trust measure	Study setting	Team distribution	r
Hempel et al., 2009	102	0.77	0.89	Goal comp.	G/M/m	Field	-	0.25
Herndon, 2009	38	1.00	0.96	Goal comp.	C/U/W	Field	Distributed	0.35
Hu, 2013	67	0.74	0.93	Effectiveness	G/U/W	Field	-	0.35
Huang, 2009	60	0.82	0.87	Goal comp.	G/U/W	Field	-	0.56
Huansuriya, 2014	31	(0.92)	(0.88)	Effectiveness	G/M/W	Field	Co-located	0.39
Huansuriya, 2014	37	(0.92)	(0.88)	Effectiveness	G/M/W	Field	Co-located	0.06
Jarvenpaa et al., 2004	52	(0.92)	0.88	Goal comp.	G/M/m	Field	Distributed	0.40
Joshi et al., 2009	28	0.72	0.68	Goal comp.	C/U/m	Field	Mixed	0.31
Kanawattanachai, 2002	38	1.00	0.97	Goal comp.	C/U/I	Field	Distributed	0.37
Khan et al., 2014	44	(0.92)	0.88	Effectiveness	A/U/m	Field	-	0.37
Kirkman et al., 2006	40	(0.92)	0.93	Effectiveness	G/U/W	Field	Distributed	0.24
Langfred, 2004	71	(0.92)	0.83	Goal comp.	G/U/m	Field	Co- located	-0.10
Langfred, 2007	31	(0.92)	0.94	Goal comp.	G/U/I	Field	Co-located	0.26
Lee et al., 2010	34	0.90	0.966	Goal comp.	G/M/I	Field	Co- located	0.64
Lee, 2005	88	1.00	0.84	Effectiveness	G/M/W	Field	Co-located	0.24
Leslie, 2007	49	0.97	0.95	Goal comp.	G/U/W	Field	Co-located	0.14
MacCurtain et al., 2008	39	1.00	0.81	Distal	B/U/I	Field	Co-located	0.11
Mach et al., 2010	59	1.00	0.83	Effectiveness	G/U/m	Field	Co-located	0.33
Maurer, 2010	218	(0.92)	(0.88)	Goal comp.	B/U/W	Field	-	0.15
Ming-Huei et al., 2008	54	0.82	0.83	Creativity	G/W	Field	-	0.62
Muethel et al., 2012	80	0.92	0.82	Goal comp.	G/-	Field	Mixed	0.36
Myers & McPhee, 2006	62	0.88	0.73	Goal comp.	B/W	Field	Co-located	0.55
Niemitz, 1983	20	1.00	0.76	Effectiveness	-/-	Lab	Co-located	0.09
Palanski et al., 2011	35	(0.92)	(0.88)	Goal comp.	G/m	Field	-	0.38

Study	N	r_{xx}	r_{yy}	Performance measure	Trust measure	Study setting	Team distribution	r
Palanski et al., 2011	16	(0.92)	(0.88)	Goal comp.	G/m	Field	Co-located	0.73
Parayitam & Dooley, 2009	109	0.85	0.95	Goal comp.	G/W	Field	Co-located	0.51
Patel, 2012	36	1.00	0.95	Effectiveness	C/-	Lab	Co-located	-0.02
Peterson & Behfar, 2003	67	(0.92)	0.89	Goal comp.	G/W	Field	Co-located	-0.20
Phillips, 1996	91	0.85	0.74	Effectiveness	G/I	Field	Co-located	0.30
Pinjani & Palvia, 2013	58	0.86	0.89	Effectiveness	G/W	Field	Distributed	0.37
Pitariu, 2007	71	1.00	0.90	Effectiveness	G/I	Lab	Co-located	0.24
Pitts, 2010	49	1.00	0.88	Efficiency	G/m	Lab	Distributed	0.03
Politis, 2003	49	0.93	0.90	Goal comp.	G/m	Field	Co-located	-0.08
Porter & Lilly, 1996	80	(0.92)	0.93	Goal comp.	G/I	Field	Co-located	0.22
Prichard & Ashleigh, 2007	16	1.00	0.94	Effectiveness	G/I	Lab	Co-located	0.48
Purvanova, 2008	112	(0.92)	0.88	Goal comp.	G/W	Field	Distributed	0.04
Qiu & Peschek, 2012	26	0.91	0.90	Effectiveness	G/m	Field	Co-located	0.59
Rau, 2001	111	1.00	0.85	Effectiveness	G/m	Field	Co-located	-0.05
Rispens et al., 2007	27	0.87	0.89	Goal comp.	G/W	Field	Co-located	0.76
Roberge, 2007	47	1.00	(0.88)	Effectiveness	G/m	Lab	Co-located	0.18
Rodney, 1997	35	0.94	(0.88)	Goal comp.	G/W	Field	-	0.38
Small & Rentsch, 2010	60	0.99	0.94	Goal comp.	G/W	Field	Co-located	0.40
Stephens et al., 2013	82	1.00	0.89	Creativity	A/W	Field	Co-located	0.14
Stewart & Gosain, 2006a	55	0.98	0.91	Effectiveness	G/W	Field	Distributed	0.35
Stewart & Gosain, 2006b	67	1.00	0.94	Effectiveness	G/W	Field	-	0.09
Tang, 2015	86	1.00	0.93	Effectiveness	G/W	Field	-	0.21
Tsai et al., 2012	68	0.87	0.93	Creativity	C/m	Field	-	0.18

Study	N	r_{xx}	r_{yy}	Performance measure	Trust measure	Study setting	Team distribution	r
Webber, 2008a	31	0.92	0.86	Effectiveness	G/m	Field	Co-located	0.75
Webber, 2008b	54	(0.92)	(0.88)	Effectiveness	G/-	Field	Co- located	0.48
Wells, 2006	51	(0.92)	0.92	Effectiveness	G/m	Field	Distributed	0.56
Wiedow et al., 2013	32	1.00	0.85	Efficiency	G/W	Lab	Co-located	0.52
Wiedow et al., 2013	137	(0.92)	0.94	Goal comp.	G/m	Field	-	0.29
Zheng, 2012	98	0.83	0.91	Goal comp.	G/I	Field	Co-located	0.10
Zornoza et al., 2009	66	1.00	0.80	Goal comp.	-/W	Lab	Mixed	0.21

Note. Reliabilities under parentheses were input based on average reliabilities per analysis; Goal comp.= Goal completion; G= Global; C= Cognitive; A= Affective; B= Behavioral; I= Referent "I;" W= Referent "We;" m= Referent mixed.

APPENDIX B: FINAL CODESHEET

Label	Categories
Basic Study Information	
Article Identifier	
Year	
Independent sample number	Article #.1
	Article #.2
Sample type	1. Employed (non-military) adults
	2. College students
	3. Community sample of adults
	4. Sports, adults
	5. Military
	6. Mixed
Setting	1. Field (including MBA project teams)
	2. Lab
Job/Sample description	
Age mean	
Gender	1. All female
	2. All male
	3. Mixed
Gender ratio	% female
Sample location	1. U.S.
	2. South America
	3. Europe
	4. Africa
	5. Middle East
	6. Asia
	7. Australia
	8. Mixed
	9. North America (non U.S.)
Race	% Caucasian
Individual sample size	
Sample size	
Team size	
Team familiarity/Tenure	
Team duration	
Team distribution	1. Mostly co-located (i.e., FtF)
	2. Mostly distributed
	3. Partially distributed
	4. Mixed (e.g., manipulating f2f vs Dist)
Task interdependence	1. High
	2. Low
Leadership	1. Assigned (internal) leader
	2. Assigned (external) leader
	3. Shared leadership
	4. Non-assigned leader
Assigned role diversity	1. Yes
	2. No
Task type	1. Creativity tasks (e.g., idea generation)
	2. Decision-making (e.g., simulators)
	3. Production tasks (e.g., manufactory)

Label	Categories
	4. Project tasks (e.g., RD team)
	5. Mixed
	6. Service (e.g., healthcare, sales, etc.)
	7. Psychomotor tasks (e.g., sports teams)
	8. Managing others (e.g., TMT)
Relationship	
Trust linked to	1= Diversity
	2= Team Performance
Diversity measurement	
Measure of diversity description	
Specific categorization	1. Age
	2. Gender
	3. Race/Ethnicity
	4. Cognitive ability
	5. Culture
	6. Conscientious
	7. Emotional stability
	8. Agreeableness
	9. Extroversion
	10. Education/Degree
	11. Function
	12. Openness to Experience
	13. Perceptual/cognitive
	14. Tenure
	15. Experience (including intl)
	16. Group value
	17. Nationality/birthplace
	18. Time zone/geography
	19. Language
	20. Composite of surface-level
	21. Composite of deep-level
	22. Composite of surface- and deep-level
	22. Composite of diversity
	23. Work/ethnic status
	24. Locus of control
Broad diversity type	1. Surface-level
	2. Deep-level
	3. Mixed
Operationalization of diversity	1. Perceived diversity
	2. Observer report
	3. Dummy coded
	4. Difference score
	5. Relational (Tsui et al., 1992)
	6. Correlation
	7. Euclidean distance (separation)
	8. Variance/ SD (separation)
	9. Blau's index (variety)
	10. Teachman's entropy (variety)
	11. Allison's coefficient of variation (disparity)
	12. Gini coefficient (disparity)
	13. Faultlines
	14. Percentage

Label	Categories
	15. Absolute number of (category)
	16. Geodesic distance
	20. Opposite of diversity (e.g., similarity, homogeneity, homophily)
	21. Mixed
Diversity measure, # of iteams	
Diversity measure, reliability	1. Objective
	2. Alpha
	3. ICC2 (favor this when all reported)
	4. rwg
	5. ICC1
	6. Spearman-Brown
	7. sqrt AVE
	8. team-level alpha
	9. Interrater reliability
Performance measurement	
Specific categorization	1. Performance
	2. Team performance
	3. Indicator of performance
	4. Effectiveness
	5. Group performance
	6. Group productivity
	7. Decision/Outcome quality
	8. Perf/Time
	9. Creativity
	10. Innovative Perf
	11. Efficiency
	12. Project success
	13. Past performance
	14. Processing time
	15. ROA
	20. Composite
Measure of Outcome description	
Operationalization of Outcome	1. Efficiency
	2. Team performance
	3. Creativity or Innovation
	4. General performance (e.g., efficiency, innovation, quality, etc.)
	5. Distal outcome (e.g., ROA)
Outcome measure, # items	
Outcome measure, reliability	1. Objective
	2. Alpha
	3. ICC2 (favor this when all reported)
	4. rwg
	5. ICC1
	6. Spearman-Brown
	7. sqrt AVE
	8. team-level alpha
	9. Interrater reliability
Aggregation method	1. Self-report (referent "I")
	2. Self-report (referent "we")
	3. Self-report (referent mixed)

Label	Categories
	4. Self-report (referent unknown)
	5. Self-report (referent "other," e.g., this performance)
	10. Observer report (e.g., supervisor)
	11. Objective measure
	12. Difference score (considering individual responses)
	13. Social network
	20. Mixed
Trust measurement	
Definition of trust	1. Global (e.g., mixed)
	2. Positive expectations (e.g., cognitive)
	3. Willingness to be vulnerable (e.g., affective)
	4. Direct measure (e.g., looking at behaviors or trust itself)
Dimensionality of trust	1. Unidimensional
	2. Cognitive-driven/Competence/Confidence/Reliance
	3. Affect-driven/Motives or values/Social trust/Disclosure
	4. Distrust: confident negative expectations
	5. Composite (2 dimensions)
	6. Composite (3 dimensions)
	7. Composite (4 dimensions)
	8. Composite of diff measures of trust
Trust measure, # of items	
Trust measure, reliability	1. Objective
	2. Alpha
	3. ICC2
	4. rwg
	5. ICC1
	6. Spearman-Brown
	7. sqrt AVE
	8. team-level alpha
	9. Interrater reliability
Aggregation on method	1. Self-report- REFERENT: Individual
	2. Self-report - REFERENT: Team
	3. Self-report - REFERENT: Mixed
	4. Self-report - REFERENT: Unknown
	5. Self-report - ONLY ONE TEAMMATE
	10. Observer report (e.g., supervisor)
	11. Objective measure
	12. Relational- GAPIM
	13. Relational - Social network
	14. Relational - Standard deviation
	20. Mixed
Statistics	
Type of effect size	1. r
	2. F
	3. t
	4. d
	5. Ms, SDs
	6. z
Effect size	

Label	Categories
Correlation (r)	
Page number	

Note. Blank cells indicate continuous or descriptive variable

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