

Running head: Blurred Lines

Blurred Lines:
How the Collectivism Norm Operates through Perceived Group Diversity to Boost or Harm
Group Performance

Jennifer Chatman

Lindred Greer

Eliot Sherman

Bernadette Doer

Organization Science, minor revision

Abstract

We develop and test a theory that reconciles contradictions regarding how collectivistic norms influence group performance. We draw on the perceived diversity literature to hypothesize that collectivistic norms cause group members to “blur” demographic differences, resulting in a shared perception that group members are more similar to one another than they actually are. Whether this benefits or harms group performance depends on the level of objective diversity in the group and the relevance of the perceived diversity attribute for accomplishing the group’s task. For conjunctive tasks, the group’s performance is determined by its weakest member, and high levels of cohesion are needed. Our theory suggests that collectivism benefits group conjunctive performance when objective national diversity is high by blurring divisive relational differences and has no effect in groups with low objective national diversity. In contrast, for disjunctive tasks, the group’s performance is determined by its best member. Our theory suggests that collectivism harms group disjunctive performance when objective expertness diversity is high by blurring differences in task-relevant expertness and has no effects in groups with low objective expertness diversity. We find support for our theory in two studies, including an archival study of 5,214 Himalayan climbing groups and a laboratory experiment involving 356 groups. Our results show that collectivism is a double-edged sword for diverse groups, and that these contradictory effects can be understood by identifying how the collectivistic blurring of perceived group diversity helps or hurts groups based on the structure of the tasks on which they are working.

Blurred Lines:

How the Collectivism Norm Operates through Perceived Group Diversity to Boost or Harm Group Performance

Organizational scholars have suggested that a collectivistic orientation enhances group behavior (Triandis and Suh 2002, Oyserman et al. 2002). They have considered this link to be straightforward because the very definition of collectivism, as a norm in which the demands and interests of groups are prioritized above individual needs and desires to achieve collective goals, focuses explicitly on the essential nature and objectives of a group (Wagner 1995). Accordingly, a unifying assumption is that cooperation with relevant group members constitutes a primary feature—perhaps even the defining feature—of collectivism (Mead 1976, Triandis 1990). Research has supported the idea that collectivism benefits groups. Groups characterized by a more collectivistic orientation evaluate their ingroup members more favorably (Lee and Ward 1998, Gomez et al. 2000), are less prone to social loafing (Earley 1989), work more effectively with ingroup members than alone or with outgroup members (Earley 1993), prioritize collective goals over individual ones (Triandis 1995, Yamaguchi 1994) and perform better (Jackson et al. 2006).

Examining the empirical research more closely, however, reveals that the seemingly obvious relationship between collectivism and group performance is neither straightforward nor entirely robust. For example, in Wagner's (1995) foundational study, collectivism failed to influence the relationship between a group's sense of responsibility for shared outcomes and members' cooperative behavior. Other research indicates that collectivists may sacrifice achievement in groups to maintain harmonious relationships (Redding 1993, Kim et al. 1994) and that adopting a collectivistic orientation can actually reduce rather than improve a work group's performance. For example, Goncalo and Staw (2006) showed that individualistic groups outperformed collectivistic groups on a creative task, while Ng and Van Dyne (2001) reported that collectivism reduced decision making quality.

Equivocal findings such as these raise the possibility that, despite decades of research, researchers still do not fully understand how collectivism influences group performance (Betancourt and Lopez 1993). We introduce a theoretical framework to explain both why and when collectivism can help or harm

a group's ability to achieve its goals. In developing this framework, we highlight that the essence of collectivism is a focus on the group, and thereby a reduced focus on individual differences (Chatman et al. 1998). This reduced perception of individual differences is an important, nearly definitional component of collectivism and, we argue, can usefully be examined as a central mechanism in how collectivism operates in groups. We identify how, in bringing groups together, collectivism has the potential to help or hinder group performance because of how it influences perceived group diversity, defined as "the degree to which members are aware of one another's differences, as reflected in their internal mental representations of the unit's composition" (Shemla et al. 2016). By making salient a view of members as interchangeable exemplars of the group (Chatman et al. 1998), the norm to be collectivistic reduces group members' perceived diversity—their propensity to view one another as different—and effectively causes them to "blur" distinctions between them, much like an out-of-focus group photo that makes it difficult to distinguish between individuals. A key implication of blurring is that perceptions of diversity may not correspond to objective measures of diversity as closely as was once thought (Pfeffer 1983); and that, accordingly, perceived diversity may exert a greater influence on group processes and outcomes than does a group's objective diversity (Shemla et al. 2016).

To understand which group contexts are most influenced either positively or negatively by the collectivistic blurring of a group's diversity, we build upon Bell's (2007) suggestion to examine the intersection between tasks – whether they are more conjunctive or disjunctive (LePine et al. 1997, Steiner 1972) – and diversity type – in which we differentiate between relations- and task-oriented diversity (Jackson et al. 1995). Specifically, we propose that, to be successful on conjunctive group tasks (tasks on which all members of the group must complete the task and the group cannot proceed to the next task until each member has done so; Frank and Anderson 1971), groups depend upon a strong sense of solidarity among members (Goncalo et al. 2010, Miller and Komorita 1995). In such settings, cohesion is essential, and perceiving relations-based differences among group members (such as national differences, which are typically less task-relevant) may particularly impede the solidarity needed to perform well (Williams and O'Reilly 1998). Thus, groups working on conjunctive tasks with a high level of objective

relations-based diversity may benefit the most from a collectivistic norm, which reduces perceptions of relations-based diversity and enables group solidarity.

In contrast, we propose that group tasks that are disjunctive in nature (where performance is a function of the most competent members of the group—and in which, therefore, individuation and expertise-identification are critical) are most helped by *maintaining* salient differences among group members, particularly those related to task-oriented diversity, or the distribution of attributes that are relevant to a group's work such as expertness (Bunderson and Sutcliffe 2002). Thus, groups working on disjunctive tasks with a high level of objective task-based diversity may be the most harmed by a collectivistic norm, which reduces perceptions of task-based diversity and, thereby blocks a group's ability to identify members' expertise levels (Littlepage 1991).

We conducted two studies to test our theoretical model. Using an archival study of Himalayan mountain-climbing expeditions, we demonstrate that collectivism benefits group performance on a conjunctive task (summitting a mountain, as discussed by Steiner, 1972), and harms group performance on disjunctive tasks (recognizing differences in members' expertness to preserve climber safety). We chose the Himalayan expedition context because the different sub-tasks incorporated within it include both conjunctive group tasks, which require cohesion and pro-social helping, as well as disjunctive tasks, which necessitate complex problem solving. Additionally, the outcomes in this setting are objective and immensely consequential, which is often not the case for empirical tests of group processes (Van Dijk et al. 2012). In our second study, a controlled laboratory experiment with 366 three-person groups, we investigate the mechanism explaining our effects shown in Study 1 and show in a causal test of our model that collectivism causes members to blur their perceptions of all forms of group diversity, explaining how the norm operates to benefit or harm group performance. Across both studies, we show that collectivism benefits group conjunctive task performance in groups with high objective levels of nationality diversity and harms group disjunctive task performance in groups with high objective levels of expertness diversity.

We offer three contributions in this paper. First, we address the ongoing debate about the effectiveness of a collectivistic orientation for group outcomes (Goncalo and Staw 2006). We show that

the contradictory effects of collectivism on group performance can be reconciled by considering both group composition (the levels of relations- and task-oriented diversity) and the type of task (whether group performance is dependent on group cohesion (conjunctive tasks) or on individual differentiation (disjunctive tasks)). Second, we offer insight into the primary mechanism by which collectivism benefits performance on conjunctive tasks and harms performance on disjunctive tasks - by blurring members' perceptions of the group's diversity. Identifying the key mechanism by which collectivism operates in groups provides insight into the circumstances in which collectivism is likely to help or harm group performance. Third, we extend the growing literature on perceptions of diversity (Homan et al. 2010, Shemla et al. 2016, Phillips et al. 2018) by pinpointing both when objective diversity is perceived in groups, and when such perceptions of diversity help or hurt group performance.

Collectivism in Groups

Scholars have defined collectivism in various ways (Chen et al. 1998) but its core element is “that [collectivistic] groups bind and mutually obligate individuals” (Oyserman et al. 2002, p. 5). Collectivism transcends levels of analysis and is relevant to individuals (Markus and Kitayama 1991), organizations (Hofstede 2001), and nations (Shteynberg et al. 2009). The primary difference between a collectivistic and an individualistic orientation is the extent to which people consider themselves to be defined by the group—that is, interdependent or independent (Morris and Peng 1994).

The question of whether collectivism benefits groups continues to animate and challenge organizational scholars. On the one hand, research has suggested that emphasizing collectivism should enhance group effectiveness since members value one another more (Lee and Ward 1998, Gomez et al. 2000), work harder together than alone (Earley 1989, 1993), help each other (Flynn et al. 2001), identify more with the group (Chatman et al. 1998), and prioritize group goals (Triandis 1995, Yamaguchi 1994). These positive contributions to group relationships and efforts can translate into higher levels of group performance (Jackson et al. 2006). Other research, however, has raised the possibility that collectivism may actually harm groups by causing them to prioritize social relationships above task performance and achievement (Redding 1993, Kim et al. 1994), and suppressing minority viewpoints and unique information which impairs decision-making quality and creativity (Phillips et al. 2004).

Reconciling these contradictory findings requires identifying the underlying mechanism by which collectivism affects group outcomes. By understanding how collectivism influences groups, we can gain more precise insight into the contexts in which collectivism is likely to have more positive or negative effects on groups. We propose that the key mechanism by which collectivism influences groups is by blurring the perception of group diversity, which may help in certain contexts and hurt in others.

Collectivism and Perceived Group Diversity

Collectivism at the task-group level is best understood as a social norm (Jetten et al. 2002), or a widely held belief regarding the appropriateness of behaviors such as a concern for maintaining harmony and commitment to shared goals within the group (Cialdini et al. 1990). People follow social norms closely to verify that their behavior and beliefs are appropriately aligned with relevant groups' expectations (Fu et al. 2007). Thus, greater exposure to the norm to be collectivistic should orient group members toward shared goals and predispose them to work towards the group's collective interests (Bartel 2001, Marcus and Le 2013). Social identity theory refers to this as *depersonalization*, which describes people's tendency to focus less on their individuating attributes as the salience of a shared group identity increases, and instead view themselves as interchangeable exemplars of the social category.

To understand how collectivism depersonalizes members and influences groups, we draw on theories of group diversity (Joshi and Roh 2009; Van Knippenberg et al. 2004). Researchers have been keenly interested in group diversity for over 60 years, but the relationship between objective diversity and group performance remains decidedly ambiguous, with multiple meta-analyses and reviews finding no, or only small and often inconsistent direct effects (Mannix and Neale 2005, Williams and O'Reilly 1998). To address these mixed findings, scholars initially attempted to distinguish between different forms of diversity. For example, Jackson and her colleagues (1995) distinguished between "relations-oriented diversity" and "task-oriented diversity." Relations-oriented diversity, which includes differences in nationality or gender, is relevant to how interpersonal relationships evolve within a work group. When these attributes are made salient, people in stereotyped categories such as sex and race are perceived as less effective and prevented from making contributions regardless of their actual qualifications (Fiske and

Markus 2012). Such biases and categorizations can harm social cohesion (Jehn et al. 1999), hindering overall group performance (Hornsey and Hogg 2000). In contrast, task-oriented diversity, such as differences in tenure and functional background (Van der Vegt et al. 2005), reflects the distribution of attributes that are relevant to a group's work. These attributes constitute a group's cognitive resource base and can be associated with elaboration-based processes such as information exchange, information processing, gaining feedback, and integrating information (Joshi and Roh 2009). Some research shows that these differences in education, tenure, and function increase group performance (Jehn et al. 1999) and group creativity (Bell et al. 2011). Critically, however, meta-analyses on the effects of objective diversity on group performance have failed to find robust differences between relations- and task-oriented diversity (Horwitz and Horwitz 2007, Van Dijk et al. 2012).

Recent research suggests that the lack of a consistent relationship between objective diversity and group performance may be due to the fact that diversity is not always perceived in groups (Shemla et al. 2016). Scholars have long recognized that objective differences are not always recognized by group members (Zellmer-Bruhn et al. 2008) and do not necessarily reflect differences in perspectives or informational resources (Lawrence 1997). Indeed, the most prominent theories of how diversity influences groups are predicated on members' acknowledging differences—as an antecedent of group processes such as information elaboration (Van Knippenberg et al. 2004) and conflict (Allport 1954). Despite the evidence for the decoupling between objective and perceived diversity, diversity research has predominantly relied on “black-box” perspectives which account only for the actuarial presence of diversity and has failed to find consistent links to group processes and performance (Shemla and Meyer 2012). Therefore, it is increasingly apparent that researchers need to understand when and how objective diversity is perceived in groups (Van Dijk et al. 2012), particularly given the increases in diversity in the workplace (Mannix and Neale 2005).

The emerging work on perceptions of group diversity builds on social identity theory, which suggests that group members make automatic judgments about the objective level of diversity in their group (Phillips et al. 2018). Initial research suggests that a focus on perceived group diversity may yield more robust theories and consonant findings than have approaches based on objective measures of

diversity (Shemla et al. 2016). For example, objective demographic faultlines harmed group outcomes when group diversity perceptions were high, but not when they were low (Homan and Greer 2013, Jehn and Bezrukova 2010). While this line of work is encouraging, one of the key challenges is that perceptions of group diversity are not always accurate, and may have little to do with the objective levels of group diversity. Other aspects of team composition (Daniels et al. 2017) as well as the normative context (Chatman et al. 1998) can influence how accurately members' perceive their group's objective diversity. If perceptions of diversity can determine team outcomes more reliably than objective measures, the lack of a theoretical framework to understand how team norms and objective diversity levels interact to predict perceived group diversity (and, thereby, group outcomes) is problematic.

We develop a theory to understand how group norms can alter perceptions of diversity in groups and how the relationship between group norms and group composition influences group performance. We draw on social identity theory to advance the argument that by encouraging a focus on group commonalities and raising the salience of a view of members as interchangeable exemplars of the group, collectivism causes members of diverse groups to be less able to attend to relevant distinctions among them (Leonardelli et al. 2010). This implies that the norm to be collectivistic can reduce or "blur" the perception of all forms of diversity in objectively diverse groups. When members of a group differ in relations-oriented attributes, collectivism can reduce perceived relations-oriented diversity and its associated social categorizations, biases, and relational conflicts (Pelled et al. 1999). But in groups whose members differ on task-oriented attributes, collectivism also reduces perceived task-oriented group diversity, making it harder for groups to capitalize on unique and essential information for accomplishing their work. We therefore suggest that collectivism leads members to "blur" attributes on which members differ, even when those differences are important for task success, and that this can explain when collectivism will help or hurt group performance. In sum, we extend emerging research on perceived diversity by offering an explicit theory and empirical test of how reduced perceived diversity, or the blurring of differences among members, is driven by the levels of collectivism and objective diversity in groups and can influence group outcomes, depending on perceived group diversity and the task type.

The Role of Task Type in Understanding How The Collectivistic Blurring of Perceived Differences Influences Group Performance

In understanding when collectivism causes members to blur different forms of perceived group diversity and how blurring, in turn, influences group performance, we look to research on the types of tasks on which groups are working. Researchers have shown that group tasks vary significantly in how much and what type of interdependence is needed to achieve success (McGrath et al. 1995, Steiner 1972). A key task-distinction that maps well onto the categorization versus elaboration processes that characterize groups that perceive themselves to be relationally- or task-diverse (Van Knippenberg et al. 2004) is Steiner's (1972) distinction between conjunctive versus disjunctive tasks. Steiner (1972) proposed a comprehensive theory of group productivity to explain how and why groups may not realize their performance potential. Steiner argued that understanding this requires considering the structure of the task that a group is undertaking, as this determines the relative weight of member contributions.

Steiner (1972) identified tasks as *conjunctive* or *disjunctive*. In working on conjunctive tasks, the group's performance is primarily a function of its weakest contributor (Weber and Hertel 2007). In contrast, when working on disjunctive tasks, the contribution of one member can effectively represent the contribution of the group as a whole (Kerr and Bruun 1983). We focus on conjunctive and disjunctive tasks because they offer a clear contrast of forms of group interdependence and, as such, also constitute the primary comparison through which scholars of group processes have applied Steiner's (1972) theory (Faddegon et al. 2009). Conjunctive and disjunctive tasks are the most uniquely suited to understand the potentially opposing effects that perceptions of relations- and task-oriented diversity can activate in groups. Conjunctive tasks require groups to interact to ensure that all members accomplish group goals, as performance is determined by the worst performing members, who can prevent the entire group from completing the group task (Steiner 1972). As such, conjunctive task performance may be particularly derailed by perceived relational differences in groups, which threaten to undermine the group focus, cohesion, and solidarity (Jehn et al. 1999) that motivates members to assist, improve, and bring along the weakest performers (Miller and Komorita 1995). Accomplishing disjunctive tasks, in contrast, requires that the most expert members have a greater say in the group's approach, as group performance is

determined by the best performing group member (Littlepage 1991). A solution is derived by the member(s) with the most expertness and that solution is adopted for the whole group. As such, disjunctive task performance may be particularly bolstered when members perceive task-oriented differences that promote the individuation and information elaboration needed to identify expert members and give them greater influence in group decisions (Van Knippenberg et al. 2004). Therefore, we suggest that the collectivism norm can benefit group performance on conjunctive tasks by reducing members' perception of relations-oriented diversity, but that it can also harm group performance on disjunctive tasks by reducing members' perception of task-oriented diversity.

Collectivism improves conjunctive task performance in objectively relationally diverse groups. We first propose that emphasizing the collectivism norm will improve conjunctive task performance, but only in groups that have high, but not low, objective relations-oriented diversity. We focus here on objective national diversity, a specific and common relations-oriented diversity attribute. Nationality is a fundamental aspect of a person's identity because it is in force "from birth," is readily detectable, and influences how people interact, share information, and define and solve problems (Gibson and Gibbs 2006). Cultural identity groups share certain worldviews, sociocultural heritages, norms, and values (Pieterse et al. 2013). As such, the *perception* of different nationalities within task groups can be disruptive. When national differences are actively perceived, members are sensitized to differences in eye contact, punctuality, physiological reactions to emotional stimuli, and conversational style, and disagreements about the appropriateness of these behaviors can produce affective conflict and reduce group performance (De Dreu and Weingart 2003).

We suggest that in objectively nationally diverse work groups, collectivism reduces the perception of national diversity, and thereby improves group performance on conjunctive tasks. For tasks requiring a conjunctive orientation, a significant risk is not establishing the cohesion and group motivation needed to ensure that all members are successful and can advance to accomplish the group's goals (Weber and Hertel 2007). Collectivism can be critical for groups with high objective national diversity by blurring the perceptual categories associated with national diversity - perceptual categories the most likely to stand in the way of the needed group cohesion. This is because collectivism can help groups by redirecting

perceptual attention from individual social category differences and toward shared common group attributes which can boost shared norm adherence, cooperation, commitment, group cohesion, and identification with superordinate goals (Gong 2006), as well as reduce conflict (De Dreu and Weingart 2003). By focusing on commonalities rather than relations-oriented differences, collectivism can help groups to avoid biases associated with out-group perceptions (Hinsz et al. 1997) and enhance group performance on conjunctive tasks by elevating all members' productivity (Ellemers et al. 2004). Consistent with this, Ilies and colleagues (2007) found that groups characterized by greater collectivism formed more internal affective linkages. Thus, when collectivism mutes the disruptive effects of relations-oriented diversity, collectivism also enables groups to engage in behaviors that are relevant to accomplishing conjunctive tasks by making salient members' interchangeability, shared interests, and what they can accomplish together (Gaertner et al. 2000, Hornsey and Hogg 2000). For example, members may focus on expanding and sharing resources without distinguishing between members' relations-oriented attributes to increase group success (Galinsky et al. 2005), or, in terms of an example that Steiner (1972) highlights as the prototype of a conjunctive task, more mountain climbers in an expedition may summit the mountain when national diversity is blurred by collectivism.

The blurring of such relational differences in collectivistic, objectively relational diverse groups can thereby foster higher levels of cohesion and solidarity than seen in either homogeneous teams (with low or high levels of collectivism) or nationally diverse groups with low levels of collectivism that more acutely perceive their differences (Chatman et al. 1998). This occurs for two reasons. First, the cohesion that emerges in groups with high objective national diversity that is not perceived as such (due to the high collectivism) is less expected than in nationally homogenous groups and may produce a contrast effect (Gibson and Gibbs 2006). Further, even if objective national differences are not perceived or formally acknowledged by members, there is likely still to be at least some awareness of these differences, and a benefit from them (Goncalo et al. 2015), as well as positive surprise at the amplified cohesion and solidarity despite objective relational differences. In homogenous teams, cohesion is expected, and so no contrast-and-amplification effect will emerge. And in objectively diverse teams that perceive their national differences, conflict is more likely than cohesion (Shemla et al. 2016). In support of this,

research has shown that teams that are both diverse and collectivistic are more cooperative than teams that lack either diversity or collectivism (Flynn et al. 2001) and that they perform better (Chatman et al. 1998, Goncalo and Staw 2006). Similarly, research has shown a positive association between collectivism and cooperation in the relationally-diverse groups studied by Wagner (1995) and Eby and Dobbins (1997).

Second, teams in which members represent diverse relational backgrounds yet focus on perceiving their common group identity are the most optimally distinct for social interaction (Brewer 2011), allowing them to draw on both individual and group sources of esteem. In homogenous teams with high collectivism, there is no basis to differentiate between members to ensure individual sources of self-esteem within the group. And in diverse teams that perceive their national differences, members may only focus on individual differences and not on the shared goals that bind them at the group level, leading to social categorizations and conflict, and derailing the cohesion needed for conjunctive task performance (Miller and Komorita 1995). Indeed, groups have the greatest social harmony when individual categorical identities are paired with a superordinate group identity (Hornsey and Hogg 2000). Therefore, we propose that collectivism benefits conjunctive task performance when groups are more (but not less) objectively relationally diverse, via the blurring of perceived group diversity.

Collectivism harms disjunctive task performance in objectively task-diverse groups. In contrast to the positive impact that the collectivistic blurring of perceived relations-oriented diversity has on conjunctive task performance, we propose that collectivism will harm disjunctive task performance in groups characterized by more (but not less) objective task diversity. We focus here on objective expertness diversity, which reflects the degree to which members have different *levels* of task-relevant knowledge (Bunderson and Sutcliffe 2002), and is distinct from expertise diversity, which focuses on the *type* of expertise (similar to functional differences) (Van der Vegt et al. 2006). The perception of objective expertness diversity is particularly relevant as disjunctive task performance is determined by identifying the single best solution on behalf of the entire group (Steiner 1972). Identifying and choosing a single solution to a complex problem on behalf of a group necessitates an expertness hierarchy within

the group, which can provide a heuristic to weight information and to identify whom should make the final decision on behalf of the group (Keltner et al. 2008).

We predict that collectivism will harm disjunctive task performance in more objectively expertness diverse groups by blurring this potentially valuable form of diversity. This is because by blurring the perception of differences that are relevant to accomplishing disjunctive tasks, collectivism diminishes the elaboration capacity of objective expertness diversity (Gardner 2012). Although having some members with more expertness on a complex task has been argued to provide a useful hierarchy to coordinate information and facilitate group performance (Greer et al. 2018), benefiting from expertness diversity depends on a group's ability to accurately recognize, incorporate, and weight it (Pieterse et al. 2013). According to the categorization-elaboration model, one of the key antecedents of knowledge elaboration is the belief that other group members are sources of novel and useful information and perspectives (Van Knippenberg et al. 2004). Furthermore, demography research in the information/decision-making tradition suggests that perceiving task-oriented diversity, such as expertness, enables groups to air and parse conflicting viewpoints, thereby improving their performance (De Dreu and West 2001). Thus, collectivism is likely to hurt disjunctive task performance in objectively task diverse groups by blurring the perceived task-oriented diversity needed to foster the dissent and task conflict required to surface relevant information (Thompson et al. 1996), and weight member's perspectives in accordance with their task knowledge (Molden and Higgins 2005, Wang and Lee 2006). This appears inconsistent with research supporting the benefits of collectivism on group performance (Bell 2007), but it is consistent with the idea that success on creative, complex tasks requires the group to identify divergent knowledge and capitalize upon it—precisely the kind of activity that blurring obstructs, insofar as group members' subjective perceptions of similarity preclude them from surfacing the unique information that other members actually possess (Phillips et al. 2004).

The blurring of such task differences in collectivistic, objectively expertness diverse groups can thereby foster even lower levels of information elaboration and expertise identification than seen in either homogeneous teams (with low or high levels of collectivism) or objectively expertness diverse groups with low levels of collectivism which do perceive their differences. This occurs for two reasons. First,

objectively expertness diverse groups are likely, at least at some level, to expect information to be weighted by expertise, even if members do not accurately perceive the differences that exist. Not weighting information by member expertise may feel even more unfair and biased than it would in groups that do not have objective expertness differences (ie. objectively homogenous teams) and certainly more unfair than groups where objective differences are actually perceived and utilized. As such, in objectively diverse teams, where collectivism blurs the perception of this diversity, members, upset that their expertness is not seen by the group, may be more reluctant to share and discuss information (Tyler 1987) than in both homogenous teams (where no such resentments may happen) or task-diverse teams where differences are made salient and utilized in discussion (groups that live up to the benefits of diversity for information elaboration and minority dissent; Phillips and Loyd 2006, Nemeth and Kwan 1987). Indeed, meta-analytic research has shown that a strong focus on group interdependence can lead hierarchy (including differences in relative expertness) to harm, rather than help, group performance (Greer et al. 2018). In such situations, mismatches in perceptions of rank can lead to conflicts and power struggles that constrain information elaboration and performance (Greer et. al 2011), causing objectively expertness diverse teams with high collectivism (whose perceptions of expertness have been blurred) to perform worse than both homogenous teams and objectively expertness diverse teams with low collectivism.

Second, while members may be able to better draw strength from their relational social identities at work even when they are not explicitly perceived as such in their work group (Martin and Phillips 2017), neglecting to acknowledge each others' work-related competencies may deprive members of needed status affirmation in the group (Lawler 2005) and harm the motivation needed to engage in information elaboration processes (Polzer et al. 2002), again, leading to poorer performance on disjunctive tasks. In contrast, in teams that are objectively diverse and adopt an individualistic norm, members are most likely to focus on genuine differences in their expertise levels, making it easier to identify important knowledge and improve group decisions, thereby providing the information elaboration and expertise identification needed for disjunctive task performance. In support of this thinking, Goncalo and Staw (2006) showed that individualistic norms are more beneficial than collectivist norms for tasks requiring a focus on what

makes members unique. Therefore, we propose that collectivism harms disjunctive task performance when teams are more (but not less) task diverse, via its blurring of perceived group diversity.

Model Overview

Our theory explains the relationship between collectivism and group performance by identifying how collectivism indiscriminately causes members to blur their own diversity and highlighting the task settings in which this blurring of diversity perceptions will help or hurt group performance. Specifically, we argue that collectivism will help performance in more objectively relations-diverse groups on conjunctive tasks by blurring the perception of relations-oriented group diversity, and that collectivism will hurt the performance of more objectively task-diverse groups on disjunctive tasks by blurring the perception of task-oriented group diversity, or more formally,

Hypothesis 1A. *The relationship between collectivism and group conjunctive task performance is moderated by objective relations-oriented group diversity (the group's national diversity), such that collectivism is positively related to the group's conjunctive task performance when objective group relations-oriented diversity is high and is unrelated when objective group relations-oriented diversity is low.*

Hypothesis 1B. *The relationship between collectivism and group disjunctive task performance is moderated by objective task-oriented group diversity (the group's expertness diversity), such that collectivism is negatively related to the group's disjunctive task performance when objective group task-oriented diversity is high and is unrelated when objective group task-oriented diversity is low.*

Hypothesis 2. *Perceived group diversity will mediate between the collectivistic norm and performance in objectively diverse groups, such that collectivism will reduce the perception of diversity in objectively diverse groups, and perceived group diversity will drive the impact of collectivism on group performance. Specifically, perceived group diversity will mediate the relationship between collectivism and (H2A) group conjunctive task performance in groups with high (but not low) objective relations-oriented diversity, and (H2B) group disjunctive task performance in groups with high (but not low) task-oriented diversity.*

OVERVIEW OF STUDIES

We conducted two studies to test our hypotheses. In Study 1, we examined an archival data set of Himalayan mountain-climbing expeditions to test Hypotheses 1A and 1B. We show that collectivism boosts conjunctive task performance in nationally diverse groups, but reduces disjunctive task performance in expertness diverse groups. We then conducted Study 2 – a group experiment – to casually test Hypothesis 2 regarding the mediating role of perceived group diversity in explaining how collectivism can both help and hurt group performance outcomes.

STUDY 1: METHOD

Data and Sample

The Himalayan mountain range—which stretches across Pakistan, India, Nepal, Tibet, and China—is home to the world’s most imposing peaks, including Mt. Everest, the tallest mountain on Earth. This unparalleled concentration of climbing challenges makes the Himalayas the most sought-after destination for accomplished mountaineers. We used the Himalayan Database (Salisbury and Hawley 2004 [2013]), which contains the detailed expedition records of Elizabeth Hawley, who since 1963 has served as the unrivalled chronicler of Himalayan expeditions (Jolly 2010, p. 1). Hawley has interviewed climbers from nearly all expeditions during the last half-century (Salisbury and Hawley 2004 [2013]). The Himalayan Database contains comprehensive information on 59,975 climbers who attempted Himalayan ascents in 8,184 expeditions between 1950 and 2013. We excluded several types of expeditions and climbers that did not fit with our study design such as solo and two-climber ascents.¹ Our final sample consisted of 38,818 climbers in 5,214 expeditions.

Dependent Variables

Conjunctive Task Performance: Summiting success. Summiting the targeted peak is a critical performance outcome in mountain-climbing groups; it is the central accomplishment, the ultimate desired end state, and the very basis for the expedition’s formation. Consistent with Steiner’s (1972) typology of group tasks, summiting is a conjunctive task, which he defined (p. 17) as those in which “each member of a group is required to perform essentially the same function, and everyone’s success is determined by the effectiveness with which the least proficient member operates.” Steiner (1972, p. 28) cited mountain climbing specifically as the best example of this, given the extent to which the group’s overall performance can be constrained by the limitations of its weakest member. For example, reaching the summit of a target peak can require capitalizing on a temporary break in the weather, and delays incurred because of a lagging climber can reduce the likelihood of each climber making it to the summit (Krakauer 1997). In this context, developing a level of group solidarity that motivates climbers to stick together and in which members encourage one another to persist can significantly influence summiting success. As Connally (2004, p. 13), states, “little time is saved by letting groups spread out, because slow hikers get even slower, and there’s always the danger of serious time loss if a party member goes missing.” We

constructed a group-level, continuous measure of summiting success by calculating the proportion of climbers in each group who reached the summit of their target mountain ($\bar{x} = 0.32$, $SD = 0.35$).

Disjunctive Task Performance: Climber Safety. Climber safety is another critical outcome for mountain-climbing groups and requires perpetual vigilance toward the environment and the constant re-calibrating of risk. Climber safety is maximized when mountaineering groups accurately detect and assess impending weather conditions and choose the route that is the safest. This requires surfacing and accurately weighting the expertness that is available within the group regarding its approach, particularly with respect to route selection, during each phase of the climb. As one mountain climbing textbook (Connally 2004, p. 15) describes it: “Routefinding may mean choosing from among several options for attaining your objective—a snowfield, a scree slope, or a pitch of technical rock; whether to climb a gully or a ridge; whether to follow a trail or go cross-country. The best route may depend on the season and weather, the condition of your party, the amount of daylight available, the equipment you’re carrying, and the consequences of misjudgement.” Connally (2004, p. 342) stresses the importance of expertness to this process: “Group decisions can easily be inferior to decision making by individuals, particularly in the face of uncertainty and ambiguity. Decisions taken often have more to do with relationships within the group than with objective facts or accurate appraisal of consequences ... you’ll want to learn from others

¹ Given our focus on summiting success, we excluded the 3,651 climbers who elected to only go as far as base camp, verified by climbing permits issued by the Nepalese government which require expeditions to identify in advance each climber who will be ascending above base camp. In addition, we excluded 872 climbers who were registered to attempt a summit but failed to reach base camp (183 expeditions included at least one such climber), leaving us with 55,452 climbers in 7,968 expeditions. Next, we excluded the 10,212 paid support personnel after calculating our control variable measuring climber support, which we describe below. This reduced our sample to 45,240 climbers in 7,962 expeditions (the reduction in number of expeditions at this stage is due to certain expeditions comprising entirely hired personnel such as all-Sherpa teams who were contracted to clear a trail in advance of commercial expeditions). Third, given our focus on group composition and consistent with typical definitions of a group as having three or more members (Kashy and Kenny 2000), we excluded 1,265 climbers who made ascents by themselves or with support personnel but no additional team members. This reduced our sample to 43,975 climbers in 6,697 expeditions. We also excluded 2,412 climbers who ascended in pairs, reducing our sample to 41,563 climbers in 5,491 expeditions. Next, because of the collectivism norm’s centrality to our analysis, we excluded all climbers from countries who are not included in Hofstede’s index (located at <https://geert-hofstede.com/countries.html>) as well as any expeditions that included at least one such climber. This reduced our number of expeditions to 5,244 and our number of climbers to 38,986. Finally, climber age, one of our control variables described below, was missing for 1,190 climbers, or approximately 3% of the remaining sample. These climbers were included in calculations of the control variable for the size of their group, but their age was coded as missing for the calculation of the control variable pertaining to their average expedition age. Age was missing for every climber in 30 expeditions comprising 168 climbers. Since we were unable to calculate an average age for these expeditions, we excluded them from our analysis. (However, we re-ran the analyses described below, assigning the mean group age (37.08 years) to those expeditions that were missing average age, and found no differences in the pattern of results.)

who've analyzed the particular hazard and thoughtfully evaluated their personal close calls." According to Steiner's model of group task types, climber safety is a disjunctive task, which he defined as, "The success of the group will depend upon which member's performance is selected to represent the group effort ... One member (or perhaps two or three members who have supplied the same outcome) is given total weight, and others are accorded none" (Steiner 1972, p. 17).

We operationalized climber safety as the avoidance of climber deaths during an expedition. We created a binary variable, assigning a 1 when no climbers died during an expedition and a 0 when at least one climber died during an expedition. Consistent with our focus on the group as the unit of analysis, the occurrence of a climber death is both a tragedy and an unmistakable indicator of an expedition's failure to maintain climber safety. Seven percent of mountain-climbing groups experienced a climber death ($\bar{x} = 0.07$, $SD = 0.25$).

To verify the degree to which summiting represented a more conjunctive group outcome and safety represented a more disjunctive group outcome, we recruited 246 participants on Amazon Mechanical Turk (mTurk) and asked them to rate the degree to which they viewed descriptions of these two tasks as being more focused on group solidarity or individual information detection. We developed a four-item scale to measure the solidarity requirements of a task (e.g., "To do this task, the team should be excited about advancing the group's goals together"; $\alpha = .86$), and a separate 4-item scale to measure the individual information detection needs of a task (e.g., "To do this task, the team should focus on trying to avoid anything bad happening to the group" $\alpha = .92$). As predicted, we found that summiting was seen as more conjunctive ($\bar{x} = 6.01$, $SD = 1.06$) compared to safety ($\bar{x} = 5.37$, $SD = 1.23$, $F(1, 245) = 73.02$, $p = .000$, $\eta^2 = .23$), and safety was seen as more disjunctive ($\bar{x} = 6.47$, $SD = .97$) than summiting ($\bar{x} = 6.27$, $SD = 1.09$, $F(1, 245) = 20.85$, $p = .000$, $\eta^2 = .08$).

Independent Variables

Norm to be collectivistic. We measured the extent to which each expedition is characterized as orienting members to a collectivistic norm with Hofstede's Individualism-Collectivism Index (<https://www.hofstede-insights.com/product/compare-countries/>; see also Hofstede 2001). The Index includes scores for 102 countries on a 100-point scale that ranges from 6 (Guatemala) to 91 (U.S.), with

higher numbers representing lower collectivism. Hofstede based the Index on surveys of IBM employees in 64 countries, and then refined it through research on different work populations (Hofstede and Spangenberg 1987). Accordingly, we matched each expedition member's country of citizenship to that country's score on Hofstede's Index.² This methodological approach has considerable precedent (Chua et al. 2015, Kalmijn and Tubergen 2010), including being used with Himalayan data specifically (Anicich et al. 2015). Our final sample included climbers from 80 countries, with the largest number of climbers (4,824) hailing from Japan while a single climber represented Bhutan, Morocco, Saudi Arabia, the United Arab Emirates, Tanzania, and Uruguay, respectively. We derived a continuous measure of collectivism for each expedition by averaging the climbers' individualism scores. We then used the REVRS module in STATA to reverse these values so that higher numbers reflect greater collectivism. Next, we re-scaled these values from 0 to 1 by dividing each expedition's collectivism score by 100 ($\bar{x} = 0.30$, $SD = 0.21$) to ensure comparability with our measure of relations-oriented diversity, described below. Finally, we mean-centered this variable in all analyses.

Objective relations-based diversity. Objective national diversity is the extent to which each expedition included members from different nations. We used Blau's (1977) index of heterogeneity, which measures the sum of squares of the proportion of expedition members from each nation: $1 - \sum_{i=1}^N s_i^2$, where s_i is i 's share of nationality in the group and N is the number of nationality categories.

²Even though there is substantial precedent for assigning country-level Hofstede scores to individuals, some have criticized this practice, noting that within-country variance in behaviors related to dimensions like collectivism can be lost when assessed indirectly (Kirkman et al. 2006). To address this concern, we collected additional data from a sample of Himalayan climbers to examine whether country-level scores reflected individuals' normative orientation with respect to collectivism. The sample consisted of 180 climbers from Himalayan expeditions between 2008 and 2013 (we asked participants to focus on their most recent expedition). Participants averaged 40 years old; 14% were female; and they had attempted an average of 1.43 Himalayan climbs. In addition, 44% used oxygen, while 51% participated in a commercial expedition. We asked these climbers to "Please rate each norm on a scale of 1 to 7, with 1 meaning the norm was highly uncharacteristic of your expedition and 7 meaning the norm was highly characteristic of your expedition." These items were: "It was important to climbers that they respected the group's collective decisions;" "Climbers stuck together, no matter what sacrifices were required;" "Climbers felt that it was their duty to take care of one another even if they had to sacrifice their own preferences or accomplishments;" and "Climbers on the expedition stayed together as much as they could." We factor-analyzed responses using varimax rotation. One factor measuring collectivism emerged with an eigenvalue of 1.93. Each of the four items loaded over 0.60 on the factor without any cross-loadings and with a Cronbach's alpha of .80 so we averaged responses to these four items to create a collectivism scale for each respondent. This measure, when entered into a regression analysis, significantly predicted climbers' country-level collectivism score ($\beta = 3.71$, $p = 0.005$), providing evidence that country-level scores based on Hofstede's index were valid measures of collectivism at the individual level.

For example, an expedition with three climbers from Argentina and one from Norway would have a national diversity score of 0.38. The mean national diversity score across expeditions was 0.17 ($SD = 0.25$), which we mean-centered in all analyses.

Objective task-based diversity. We created a variable measuring dispersion in climbers' objective expertness in the Himalayan region within each expedition, which is relevant given the uniquely challenging conditions. We measured expertness as the number of times a climber appears in the Himalayan Database prior to each focal climb ($\bar{x} = 1.32$, $SD = 3.41$). Sixty-one percent of ascents were attempted by a climber with no previous climbs in the region; 25% by a climber with one or two previous climbs in the region; and the remaining 14% were attempted by a climber with three or more previous climbs in the region. Ten percent of the climbers in our sample had more than three prior climbs, while less than 3% had 10 climbs or more.³ We used these data to construct, for each expedition, the coefficient of variation in climber expertness ($\bar{x} = 1.31$, $SD = 0.93$). The coefficient of variation is the standard deviation of climber expertness divided by the mean of climber expertness in the expedition.

Control Variables

Climber attributes within expeditions. We averaged climbers' age within expeditions ($\bar{x} = 36.93$ years, $SD = 10.03$ years) to create an expedition-level age control variable ($\bar{x} = 37.16$, $SD = 7.14$), since being particularly young or old may diminish a climber's physical ability to reach the summit (Huey et al. 2007). We also created a control variable for the proportion of female climbers in an expedition ($\bar{x} = 0.10$, $SD = 0.15$). Since group size could influence both group interactions and outcomes (Staats et al. 2012) and given the danger of bottlenecks on the route in which slower climbers block key passages for subsequent climbers, we also controlled for the number of climbers in each expedition. The average size of expeditions in our sample was 7.45 climbers ($SD = 4.81$). We controlled for expertness in the Himalayan region by constructing a ratio of climbers within an expedition who had attempted at least one prior climb divided by the total number of climbers in the group ($\bar{x} = 0.41$, $SD = 0.32$). Following relational demography research, this measure controls for "simple" expertness—that is, the presence of

³ As a robustness check, we also constructed a Blau index for climber experience using the three categories of experience. The mean of this index was 0.35 ($SD = 0.22$). We estimated models with this covariate in place of the coefficient of variation reported above and obtained the same pattern of results.

more or less expert members within an expedition (Tsui et al. 1992). Our independent variable pertaining to expertness, described above, therefore measures the dispersion of a group's expertness net of how expert the members are overall.⁴

Climber support. Using oxygen increases a climber's probability of summiting. 'Oxygen ratio' represents the proportion of bottled oxygen users to total climbers in each group ($\bar{x} = 0.14$, $SD = 0.29$). Support personnel are paid for various essential duties, such as breaking trail, fixing rope ahead of the climbers, and transporting supplies. A higher ratio of support personnel to climbers is likely to improve expedition success. 'Support ratio' represents the ratio of high-altitude porters and Sherpas to total climbers in each expedition ($\bar{x} = 0.22$, $SD = 0.31$).

Mountain and weather conditions. We included year and mountain dummy variables (fixed effects) to address unobserved heterogeneity between expeditions, since different mountains and the conditions in different years present varying challenges for climbers (Wooldridge 2010). Thus, our models analyze differences in outcomes only between expeditions that ascended the same mountain in the same year, making expeditions more comparable and less subject to selection and history effects.

Type of expedition. Expeditions are either commercial and formed in an ad hoc manner or non-commercial, usually emerging from preexisting ties between prominent climbers (Krakauer 1997, p. 44). In our sample 1,034 expeditions (20%) were commercial and 4,180 (80%) were non-commercial. We created a control variable and coded commercial expeditions as 1 and non-commercial expeditions as 0 ($\bar{x} = 0.20$, $SD = 0.40$).

STUDY 1: RESULTS

Means, standard deviations, and correlations among Study 1 variables are presented in Table 1.

[Insert Table 1 About Here]

Collectivism Improves Conjunctive Task Performance in Groups with High Objective Relational Diversity

Model 1 in Table 2 shows the base equation estimating an expedition's summiting ratio – our measure of conjunctive task performance. The control variables expertness ratio, oxygen ratio, and

⁴ We also estimated our models without the control for simple expertness and obtained similar results.

support ratio were positively associated with summiting, while older climbers were less likely to reach the summit. Model 2 introduces our independent variables, and shows that collectivism was positively associated with conjunctive task performance ($\beta = 0.082, p < .001$). Model 3 adds the predicted interaction in H1A between collectivism and objective national diversity on conjunctive task performance, which was positive and significant ($\beta = 0.373, p = .001$). Figure 1A displays the form of the interaction. As predicted, collectivism increases conjunctive task performance when objective national diversity is high ($\beta = 0.214, p < .05$) and has no effect on conjunctive task performance when objective national diversity is low ($\beta = 0.010, n.s.$), supporting Hypothesis 1A.

[Insert Table 2 and Figures 1A and 1B About Here]

Collectivism Harms Disjunctive Task Performance in Groups with High Objective Task Diversity

Model 4 in Table 2 shows the base equation estimating an expedition's safety, or probability of avoiding climber death – our measure of disjunctive task performance. Model 5 introduces our independent variables and shows that collectivistic groups performed worse on the disjunctive task ($\beta = -0.048, p = .01$). Model 6 adds the predicted interaction (H1B) between expertness diversity and collectivism, which is negative and significant ($\beta = -0.041, p = .03$). Figure 1B displays the form of the interaction. As expertness diversity increases, expeditions that are more collectivistic perform worse on the disjunctive task ($\beta = -0.017, p < .01$), and there is no relationship when objective expertness diversity is low ($\beta = -0.001, n.s.$), supporting H1B.

STUDY 1: DISCUSSION

We show that past contradictory accounts of the effects of collectivism on group performance can be understood by considering the objective forms of diversity present in the group and the group task type. Collectivism boosts summiting, a conjunctive task, when objective group national diversity is higher, while it reduces safety (increases climber death), a disjunctive task, when objective group expertness diversity is higher. We see from Figures 1A and 1B that collectivism only operates in the context of diverse groups to significantly boost summiting (a conjunctive task) and reduce safety (a disjunctive task), and has no effects in less diverse groups, as we proposed in Hypotheses 1A and 1B. These results support our theory suggesting that collectivism influences performance when objective diversity is high, but not when objective diversity is low and offer insight into how past mixed findings on

the effects of collectivism on group performance can be reconciled. In further support of our model, we note that the main effects of both collectivism and objective diversity varied in significance and direction across the models and different dependent performance variables we study here, showing support for our notion that both collectivism and objective diversity can best be understood by considering how collectivism moderates the impact of relations and task-oriented diverse groups working on conjunctive and disjunctive tasks.

We focus on how past mixed findings on collectivism can be understood by taking into account the levels of objective diversity in the team, but our results also have implications for diversity research. Specifically, our results suggest that the effects of objective diversity are dependent on the levels of collectivism in the group and the type of task on which the team is working. Objective nationality diversity – when paired with collective norms that reduce members’ perceptions of their differences in nationality – can provide groups with the optimal level of distinctiveness to achieve the social harmony needed for conjunctive task performance (Hornsey and Hogg 2000). Similarly, objective expertness diversity – when paired with collectivistic norms that reduce the perception and utilization of expertness – can lead to perceived unfairness and resentments that derail the information elaboration needed for disjunctive task performance (Steiner 1972). Future research could usefully test these possibilities directly.

In Study 2, we take advantage of the laboratory setting to provide a causal test of our model in which we can rule out alternative explanations, avoid selection effects, and most importantly, test the proposed mechanism by which collectivism operates, the blurring of perceived diversity.

STUDY 2 METHOD

Sample and Data

We conducted a group level experiment in two West Coast universities’ behavioral laboratories. Our design varied group norms (individualism or collectivism as categorical variables) and group compositions (homogeneous (control), nationally diverse, and expertness diverse). The six conditions are outlined in Appendix 1A. We collected data from 366 interacting groups, each with three members, or a total of 1098 subjects. Subjects were required to be over 18 years old, 32% were female, they averaged 23

years old ($\bar{x} = 23.3$, $SD = 6.4$), 40% Asian, 38% were White, 17% were Black, and 15% categorized themselves as “Other” and were typical samples from these universities.

Procedure

We presented subjects with a scenario in which they were members of a group of astronauts landing on the moon (“Moon Landing” [Hall and Watson 1970]). We manipulated subjects’ and their expeditions’ normative orientation to emphasize collectivism or individualism more, and group members were either from the same or different fictional countries (national diversity) and had the same or different levels of space travel expertness (expertness diversity). The scenario specified that the astronauts were exploring the moon in a small spaceship, had crashed on the surface of the moon, and had to safely find their way to the mother ship located 200 miles away. Expedition groups had to complete three tasks, which included rank-ordering items they could carry with them on the expedition (a control task), allocating four remaining oxygen tanks among the three group members (a conjunctive task), and selecting one of two routes to the mothership, one of which was more direct but more dangerous, the other of which was significantly longer but safer (a disjunctive task).

The study included three phases: In phase 1 (20 minutes), subjects were randomly assigned to a private laptop computer station to work individually. During this phase, subjects were presented with the group collectivism norm manipulation, information about themselves and their group, and the Moon Landing scenario. We prepared subjects to join their groups by describing information about the group’s demographic composition in terms of each climber’s nationality (native of one of three fictional countries), and the number of times they had traveled in outer space (low, medium, or high—corresponding with 0, 1, or 3 prior space expeditions). During this phase, subjects were asked to complete various tasks associated with the norm manipulation and assessing their group’s composition, described in more detail in the variables section below. Phase 2 (20 minutes) comprised the group discussion in which groups of three subjects worked on and came to a decision on the three tasks (representing a conjunctive, disjunctive, and control task) regarding their Moon Landing situation in a meeting room. In phase 3 (15 minutes), subjects returned to their private laptop station to complete additional survey questions pertaining to their group experience. Experimenters provided explicit instructions and time parameters for each phase of the experiment. All subjects who completed the experiment were paid.

Independent Variables

Norm to be collectivistic. We manipulated both subjects' and their groups' collectivistic orientation in two ways. First, subjects were randomly administered either a collectivistic or individualistic prime (0 = individualistic [50%], 1 = collectivistic [50%]) in Phase 1 of the study. Subjects in the collectivistic condition wrote down three groups to which they belong and why it would be advantageous to "blend in with a group," while those in the individualistic condition wrote three statements describing something unique about themselves and the advantages of "standing out from other people." This procedure is commonly used to prime collectivism and is consistent with experimental and non-experimental research on these norms (Goncalo and Staw 2006). Second, the content of the Moon Landing scenario was presented differently based on subjects' normative condition, consistent with prior experimental manipulations of collectivism (Chatman et al. 1998). The scenario description included an excerpt from one astronaut's diary, which emphasized either the collaborative or independent nature of the astronauts' interactions on the trek so far (Appendix 1B).

We checked these manipulations in phase 3 by asking subjects to rank 12 descriptor words of organizational culture from most (1) to least important for their group (12). In support of our manipulation, participants rated the item describing their culture as 'collectivistic' as higher in the collectivistic condition ($\bar{x} = 5.67$, $SD = .14$) than in the individualistic condition ($\bar{x} = 6.24$, $SD = .14$, $F(1, 354) = 8.37$, $p < .001$, $\eta^2 = .01$).

Objective group diversity. We manipulated group diversity with three basic conditions—homogenous, nationally diverse, and expertness diverse.

To manipulate objective national diversity subjects were randomly assigned to a Moon Landing expedition group that included members from either the same or different nations (0 = all astronauts are from the same nation, 1 = astronauts are from different nations). For all models testing objective national diversity, objective expertness diversity was held constant at a moderate level for all members (homogeneous).

Subjects were randomly assigned to an expedition group that included members who had either the same or different numbers of prior space missions (0 = astronauts have the same level of expertness, 1 = astronauts have different levels of expertness). Astronauts had been on zero, one, or two space

expeditions in the past. In homogeneous groups, all members had one prior mission (medium). In heterogeneous groups, one member had two prior missions (high), and two had no prior missions (low). For all models testing objective expertness diversity, objective national diversity was held constant, such that all members came from the same group (homogeneous).

Dependent Variables

Our dependent variables consisted of blurring and two tasks to assess the group's ability to accomplish a conjunctive and a disjunctive task. We also used the standard Moon Landing ranking task, in which members ranked the utility of items to take on the journey back to the mother ship, as a measure check to determine whether our results were specific to conjunctive or disjunctive tasks.

Perceived Group Diversity. To assess perceived group diversity, we measured whether subjects accurately perceived the full demographic composition of the astronautic group described in the scenario, in terms of members' nationality and prior experience. After the group task and while seated at their individual cubicles, participants were asked, "What are the nationalities of your two crew mates?" and "How many prior expeditions have your two crew mates been on?" We did not permit subjects to go back to view the group member descriptions to verify their responses.⁵ Twelve response options were presented for each of the diversity dimensions (e.g., for nationality: "1 from Jyneb, 1 from Uamol", "1 from Soclux, 1 from Uamol", "2 from Jyneb"; for expertness: "2 and 2", "1 and 3", "4 and 0"). Subjects who recalled their group's composition correctly were assigned a 1 and those recalling group members incorrectly were assigned a 0 (nationality: $\bar{x} = 0.38$, $SD = 0.28$; expertness: $\bar{x} = 0.19$, $SD = 0.26$). Of those who were inaccurate, only 3% perceived there to be more national diversity than actually existed and 5% perceived there to be more expertness diversity than actually existed, suggesting that inaccuracy was almost always in the direction of seeing less diversity than what actually existed in the group. We then averaged individual accuracy at the group level, with scores ranging from 0 (no members correctly perceived their group composition) to 1 (all three members correctly perceived their group composition),

⁵ This assessment occurs very quickly. In pilot experiments conducted prior to this study, when subjects were asked to state the composition of their groups immediately following the manipulation, they exhibited the same pattern of inaccurate perception: Ss in the collectivism condition were significantly more likely to perceive their crewmates' identities as significantly less diverse in terms of nationality ($F(1,157) = 5.15$, $p < .05$) and expertness ($F(1,157) = 10.60$, $p < .01$).

and similar to past approaches (Daniels et al. 2017) we used two (accuracy of) perceived group diversity scores – one each for national diversity and expertness diversity.

Conjunctive Task Performance: Unbiased resource sharing. In phase 2 of the experiment we asked subjects as a group to allocate oxygen across group members. The group had four oxygen tanks left and had to decide how to allocate the tanks within the 3-person group, in whole units (no fractions). Recalling Steiner's (1972) typology, we considered this to be a conjunctive task because failure to allocate the tanks fairly would exacerbate the extent to which the "weakest link" member constrains the group's collective performance. Conversely, providing tanks to all group members fairly—rather than, for example, preferentially—improves each member's and the group's chances of successfully reaching the mother ship and with it, achieving their ultimate goal. We expected that, rather than preferentially giving oxygen to one or another of the astronauts, collectivistic groups would be more likely to allocate oxygen equally across all group members. We asked subjects to decide as a group: "How many [of the four remaining] oxygen tanks will your crew allocate to each of the following crew members?" We then calculated the standard deviation across individual-allocations per group, to see the extent to which tanks were shared equally, or disproportionately given to a single member or two ($\bar{x} = 0.56, SD = 0.18$). Sharing resources equally to ensure that all members 'cross the finish line' is a classic example of conjunctive task performance (Steiner 1972).

Disjunctive Task Performance: Heeding an expert member's safe route advice. Consistent with our theory that blurring demographic differences is problematic when the attributes on which members differ are task-oriented, we used the group's route choice as their disjunctive task. Recalling Steiner's (1972, p. 17) typology, we considered route choice to be a disjunctive task because "the success of the group [depends] upon which member's performance is selected to represent the group effort." In other words, the group will succeed or fail based on whether they act upon the route recommendation of the most knowledgeable or expert member. We presented the route options using a map of the territory on the moon (Appendix 1C) and told subjects that Route A was more direct but more hazardous because it crossed through a series of steep mountainous ridges, whereas Route B was much longer but comparatively flat with no significant obstacles in the terrain. For groups with expertness diversity, we

provided the most-expert member of the group unique information about which route choice had the highest survival rate in the past (Route B). We expected subjects in the collectivism condition to be less attentive to other astronauts' number of prior space expeditions and as a result, that their decisions would be less influenced by the advice-giver's level of expertness. To test this, we asked subjects which route to the mothership they would choose and analyzed whether this decision was influenced by the advice of the most expert member in the group.

Groups were asked to choose which route they would take and rate their confidence in this decision. We computed the standardized interaction of choice and confidence, to reflect the degree to which groups would confidently take a safer route ($\bar{x} = 0.20$, $SD = 1.13$). If, as we predict, collectivism blurs diversity, subjects primed with collectivism should be less likely to heed the advice of the more expert astronaut and less likely to choose the safe route.

Dependent variable measure checks. To verify the degree to which equitable resource distribution represented a conjunctive task, and safety of route choice across group members represented a disjunctive task, we ran a separate measure check study on Mechanical Turk. Two hundred forty participants who did not participate in any other part of this project were given a definition of conjunctive and disjunctive tasks, randomly assigned to read about one of these two tasks, and then asked to assess how conjunctive or disjunctive the task was. To measure how conjunctive the task was, we used the same 4-item scale as in Study 1 (e.g., "To do this task, the group should be 'psyched' to accomplish their goals," $\alpha = 0.88$), and to measure how disjunctive the task was, we also used the same 4-item scale as in Study 1 (e.g., "To do this task, the group should pay close attention to the risks that may arise;" $\alpha = 0.81$). In support of our operationalization of equitable resource distribution, these tasks were seen as more conjunctive ($\bar{x} = 5.72$, $SD = 0.89$) than the route choice task ($\bar{x} = 5.16$, $SD = 1.04$, $F(1, 239) = 20.10$, $p = .000$, $\eta^2 = .08$), and the route choice safety task was seen as more disjunctive ($\bar{x} = 5.77$, $SD = 1.02$) than the equitable resource distribution task ($\bar{x} = 5.17$, $SD = 1.02$, $F(1, 239) = 20.82$, $p = .000$, $\eta^2 = .08$).

RESULTS

The key purpose of this study was to test Hypothesis 2 regarding the role of perceived diversity in mediating the interactive effect of collectivism and objective group diversity on group performance. To

test the first part of the mediation chain, we first tested whether collectivism would cause subjects to blur heterogeneous demographic attributes in more (but not less) objectively diverse groups by analyzing the effects of collectivistic norms and objective group diversity on subjects' perception of the diversity of their group's composition using ANOVAs. The interaction was significant (individualism/collectivism X objective group national diversity: $F(1,362) = 11.29, p < .001, \eta^2 = .030$; individualism/collectivism X objective group expertness diversity: $F(1,362) = 7.86, p = .005, \eta^2 = .021$). Among objectively nationally diverse groups, groups in the collectivism condition perceived less group national diversity ($\bar{x} = 0.40, SD = 0.31$) than in the individualism condition ($\bar{x} = 0.57, SD = 0.25; F(1,120) = 10.86, p < .001, \eta^2 = .083$). Similarly, among objectively expertness-diverse groups, groups in the collectivism condition perceived less group expertness diversity ($\bar{x} = 0.59, SD = 0.33$) than in the individualism condition ($\bar{x} = 0.75, SD = 0.31; F(1,120) = 7.58, p = .007, \eta^2 = .059$). As expected, these differences did not emerge in nationally homogenous groups ($F(1,242) = 0.572, n.s., \eta^2 = .002$) or expertness homogenous groups ($F(1,242) = 0.231, n.s., \eta^2 = .001$). Figures 2A and 2B display these contrasts.

[Insert Figures 2A and 2B About Here]

Next, we used multiple regression analyses, as well as the Hayes' PROCESS macro in SPSS, to test for the full mediation chain as proposed in H2A—that collectivism would improve conjunctive task performance in nationally diverse task groups (a relations-oriented attribute), and that this effect would be mediated by blurring (Figure 3A). Replicating our ANOVA results above, and in further support of the first step of the mediation chain (see Table 4, Model 7), we found an interactive effect of collectivism and objective national diversity on the perception of national diversity ($\beta = -0.173, p = .002$). Decomposing this interaction, we found that within groups with high objective national diversity, collectivism was negatively related to perceived group national diversity ($\beta = -0.29, p < .001, \text{Adj } R^2 = .15$), but not in nationally homogenous groups ($\beta = 0.05, n.s.$). In support of the next step of the mediation chain (see Table 4), perceived group national diversity was negatively related to conjunctive task performance – promoting group equality in resource sharing ($\beta = -0.132, p = .021$). In support of the final building block of mediation, using Hayes' (2017) macro for mediation (Model 11, in which we could include all three of our manipulated factors (collectivism, objective expertness diversity, objective nationality diversity) and

running 5,000 bootstrapped iterations), we found that perceived group national diversity indirectly mediated the relationship between collectivism and conjunctive task performance in objective nationally diverse groups (coefficient = 0.007, SE = .004, 95%CI: .0004, .016; Figure 3A), but not in objectively nationally homogenous groups (coefficient = -0.002, SE = .002, 95%CI: -.007, .003). We note that these effects hold only when looking within teams in which objective expertise diversity was not also manipulated. These findings are consistent with H2, and build on our findings in Study 1 to show the mechanism by which collectivism affects performance in objectively diverse groups—the blurring of perceived group diversity.

We then tested whether collectivistic (as opposed to individualistic) groups would perform worse with respect to safety (a disjunctive task outcome) in objectively expertness diverse groups, and that blurring would mediate this effect as proposed in H2B (Figure 3B). In support of the first step of this mediation model (see Table 4, Model 8), we found a significant interactive effect of collectivism and objective expertness diversity on perceived group expertness diversity ($\beta = -0.131$, $p = .019$, Adj $R^2 = .13$). Decomposing this interaction, we found that within objectively expertness-diverse groups, collectivism was negatively related to perceived group expertness diversity ($\beta = -0.24$, $p = .007$), but not in objectively homogenous groups ($\beta = -0.03$, *n.s.*). Marginally supporting the second step of this mediation model (see Table 4), perceived group expertness diversity was positively related to disjunctive task performance - the choice and confidence of taking a safer route ($\beta = 0.106$, $p = .064$). Finally, supporting the last step of mediation, using Hayes' (2017) macro for mediation (Model 14, 5,000 bootstrapped iterations), we found support for perceived group diversity indirectly mediating the relationship between collectivism and group route choice in objectively expertness-diverse groups (coefficient: -.037, SE: .024, 95%CI: -.094, -.001; Figure 3B), but not in objectively homogenous groups (coefficient: -0.004, SE: .009, 95%CI: -.024, -.013). Again, we note that these effects hold only when looking within teams where objective national diversity was not also manipulated. These findings fully support Hypothesis 2, and provide insight into the mechanism explaining our findings in Study 1 – in objectively expertness diverse groups, collectivism harms disjunctive task performance via its blurring of perceived group expertness diversity.

[Insert Figures 3A-3B About Here]

Study 2 Discussion

Our findings from Study 2 complement and extend Study 1. We again showed that collectivism boosted performance on a conjunctive task when objective national diversity was high (but not low) and reduced performance on a disjunctive task when objective expertise diversity was high (but not low), and that this effect occurred indirectly via perceived group diversity. A strength of this study is that it identifies the blurring of perceived diversity as the underlying mechanism in our model: when groups were primed to be more collectivistic, members perceived the group as significantly less nationality and expertise diverse than when they were primed to be individualistic. And, these perceptions of diversity mediated between the group's collectivism and their performance, such that blurred perceptions of relational diversity enhanced performance on a conjunctive task that required all members to work together to succeed and blurred perceptions of task diversity reduced performance on a disjunctive task that was best accomplished by taking the advice of the most expert member (route choice).

Both Study 1 and 2 illustrate the risk of relying on simple main effect relationships between collectivism and group performance. Both sets of findings suggest that using collectivism or objective diversity alone to predict performance may be misleading; the main effects of collectivism and objective diversity in our paper vary across model and study, with, for example objective national diversity helping conjunctive performance in Study 1 and then hurting both conjunctive and disjunctive performance in Study 2. As we show across studies, the true effect of collectivism depends on the interaction between the objective diversity present and the type of task – conjunctive or disjunctive – on which the group is working. Collectivism helps conjunctive task performance in more (but not less) objectively nationality diverse groups and hurts disjunctive task performance in more (but not less) objectively expertise diverse groups (directly in Study 1, indirectly in Study 2 via perceptions of group diversity).

We note that while we find direct effects in Study 1, our effects in Study 2 are indirect (the direct interactive effects of collectivism and objective diversity on performance are directionally consistent with Study 1, albeit do not reach traditional levels of significance). This pattern of direct effects in the field and indirect effects in the laboratory is consistent with past research, which typically finds stronger effects in the field as opposed to the laboratory (Van Bunderen et al. 2018, Van Dijk et al. 2012). Our findings are compelling given the overall convergence in conclusions across the two studies, with more

realism and strong effects in the field but less ability to discern causality and underlying mechanisms, and less realistic and weaker effects in the lab but random assignment enabling causal conclusions and mediation tests. Such triangulation is critical in ensuring the robustness and replicability of theory across settings.

GENERAL DISCUSSION

Collectivism can both help and hurt group performance. Across an archival study of Himalayan mountain climbing expeditions with consequential outcomes and a group experiment identifying blurring as the underlying mechanism explaining our effects, we test a broad range theory explaining when and why collectivism is more likely to benefit or harm groups. We found that collectivism can help conjunctive task performance in more (but not less) objectively relationally diverse groups by minimizing the perception of relations-oriented diversity (nationality) but can hurt group disjunctive task performance in more (but not less) objectively task diverse groups by blurring the perception of task diversity (expertise). Our research suggests that the effects of collectivism on group performance can be understood by identifying how collectivism influences people's perceptions of group diversity and the utility of that perceived diversity in different task settings. Studying Himalayan expeditions allowed us to test our hypotheses in an externally valid setting where positive and negative group performance yielded immensely consequential outcomes, including death. Our group experiment complemented this study, enabling us to identify and test the causal link between collectivism and group performance, and identifying the mediating role of perceived group diversity.

Theoretical Implications

First and foremost, our paper challenges existing thought on the universal benefits of collectivism in groups. Specifically, our results suggest that by overemphasizing the positive impact of a collectivistic orientation on group effectiveness, particularly in the context of diversity, researchers have missed an important distinction that would enable more accurate predictions of group performance. It is certainly true that collectivism can improve group processes in many ways, for example by increasing members' identification and cooperative behavior within the group (Gelfand et al. 2006). Our research, however, proposes a counterintuitive detriment associated with collectivism. Because these positive effects are driven by cognitive and motivational processes in which distinctions between group members are blurred,

collectivism also interferes with the elaboration of task-relevant information. In particular, our research shows that members of groups characterized by objective expertness diversity will fail to view other members, even those who have more expertness on the task, as potential sources of novel and useful information because perceiving the differences among members is discordant with the norm of collectivism. This is important because recognizing novel and useful information is the most critical antecedent to elaboration (Van Knippenberg et al. 2004), and without the prerequisite of perceiving differences in members' task-related expertness, groups will fail to engage in the active debate that can improve group performance (Nemeth and Kwan 1987).

Second, our theory provides insight into both the mechanism and contingencies that can explain why and when collectivism can hurt or harm group performance. At the broadest level, our theory and empirical tests highlight the importance of considering group norms and group composition in conjunction when anticipating how groups are likely to approach and accomplish tasks requiring different types of interdependence. Research has already shown that diverse groups with collectivistic norms are more cooperative (Chatman et al. 1998). Indeed, prior research and practical guidance has typically advocated for diverse groups to emphasize collectivism, arguing that it is essential to diminish the interpersonal discomfort caused by diversity and enable members to work together (Jehn and Bezrukova 2010). Thus, our more specific contribution is to show that such universally prescribed advice is misguided because, when diverse groups have a norm to be collectivistic, it causes members to indiscriminately blur differences among them, regardless of whether maintaining salient differences is relevant to the task or not. Thus, we identify a kind of collateral damage caused by an emphasis on collectivism in diverse groups because of the indiscriminate effect it has on reducing perceived diversity. This is a key contribution because it will enable more precise predictions of when groups will and will not be effective – by taking the collectivistic norm, types of diversity and task type into account - and, from a practical standpoint it surfaces the challenge of figuring out how to promote shared objectives without essentially discarding the valuable diversity that groups need to promote the information elaboration and risk assessment necessary to successfully accomplish disjunctive tasks.

This insight also advances our understanding of norms more generally because it shows that collectivism, which has often been studied as cooperative behavior within groups, has a kind of “second

order effect” - beyond promoting cooperativeness, it also causes members to see diverse members as more similar than they actually are. Future research might identify other norms that have similarly far reaching impact on groups. For example, Goncalo and colleagues (2015) found that the norm of political correctness not only increased members’ sensitivity to one another, it also reduced uncertainty and enabled members to take the risks necessary to contribute to a creative task. And, in addition to dictating specific behaviors such as precision, standardization, and reliability, cultures that are higher on the tightness side of the looseness-tightness dimension (Gelfand et al. 2006) are more likely to enforce norms across the board compared to those that are loose.

Third, we extend the emerging literature on perceptions of diversity in groups (Phillips et al. 2018, Shemla et al. 2016). Prior research has alluded to the possibility of a blurring process operating in diverse groups, in which objective demographic differences are not necessarily perceived or seen as salient (Hornsey and Hogg 2000). We build on and extend this concept by showing how collectivism’s effect on reducing perceived diversity can be beneficial or detrimental to group performance depending on the fit between the diversity and task type. Specifically, we find that a collectivistic orientation minimized the disruptive impact of relations-oriented national diversity on conjunctive tasks, in which a group-focus is needed, by causing members to blur perceptions of relations-oriented diversity in the group. At the same time, a collectivistic orientation minimized the beneficial impact of task-oriented expertness diversity on disjunctive tasks, where individuation and expertness identification are necessary, by causing members to blur perceptions of the group’s task-oriented diversity. Furthermore, while the predicted interactions were significant, our pattern of non-findings make sense in terms of our theory since the interaction between collectivism and task-oriented diversity in climbers’ expertness was *not* significantly associated with the conjunctive tasks outcomes of summiting (Study 1, Table 2, Model 3: $\beta = -0.007$, n.s.) or sharing oxygen (Study 2, Table 3, Model 3: $\beta = 0.046$, n.s.), nor was the interaction between collectivism and relations-oriented diversity in climbers’ nationality significantly associated with the disjunctive outcome of safety (Study 1, Table 2, Model 6: $\beta = -0.05$, n.s.; Study 2, Table 3, Model 5: $\beta = -0.386$, n.s.). This specific pattern, which emerged in Study 1 and which we then, of course, designed into Study 2 (only one type of diversity was present at a time essentially) illustrates the importance of specifying the nature of different performance outcomes in terms of the nature of the task as conjunctive or disjunctive, and advances our

knowledge by providing insight into when diversity is perceived and how different forms of perceived diversity influence different group task outcomes.

From a pragmatic standpoint, these findings suggest that diverse groups should strive to carefully assess the usefulness of specific diversity attributes in terms of their task orientation and utility to the group, attempting to blur only those differences that are disruptive and preserve those that are useful. Further, just as entrepreneurs need to find a balance between generating ideas and evaluating them to be successful (Brockner et al. 2004), diverse groups need to also balance their interactions across both conjunctive and disjunctive tasks during the course of their ongoing interactions, recognizing that blurring task-oriented attributes may lead to worse disjunctive task outcomes.

Study Limitations and Future Directions

Our research design constitutes a rigorous test of our theory, insofar as we are able to isolate the predicted mechanism in a randomized controlled experiment while providing results that are consistent with it in an externally valid setting—an important combination, since most collectivism research has utilized student samples (Oyserman et al. 2002). Taken together, the theory we propose here may enable more precise predictions regarding collectivism and group performance in the presence of diversity.

A key question is how generalizable our results are to other group settings given the extreme nature of Himalayan mountaineering and the artificiality of experimental simulations. First, our results are directly applicable to high-stakes groups such as oil extractors (Ely and Meyerson 2010) and astronauts (Madsen and Desai 2010) both because of the consequential nature of the work and the impact of diversity in such environments; that is, if diverse groups embrace or are encouraged to embrace collectivism, as they often are (Ely and Thomas 2001), they may fail to value expertness and, as a result, experience particularly dire consequences. Second, the Himalayan Database included a range of nationalities unequalled by prior datasets but more typical in work settings than the two or three nationalities typically examined in most organizational research (Earley 1989), suggesting that our results generalize, at least to some extent, across different nations. Third, since climbers plan for years prior to an expedition, their goal orientation is uniformly high—making our results applicable to groups that undertake work tasks with elevated levels of motivation (Pieterse et al. 2013). Thus, while Himalayan expeditions are an unusual sample from an organizational standpoint, they can still teach us a great deal

about how collectivism influences the relationship between group diversity and performance. And our replication in a group laboratory experiment suggests that the model could generalize to other settings. Furthermore, the context of the Himalayan study is such that the outcomes of summiting and death are expected to be almost entirely determined by factors orthogonal to our theorizing such as individual differences in climber skill, technology utilization, and exposure to weather patterns. Accordingly, the fact that we are able to identify effects related to our theory of group dynamics is meaningful. As Prentice and Miller (1992, p. 163) note, “Showing that an effect holds even under the most unlikely circumstances possible can be as impressive as (or, in some cases, perhaps even more impressive than) showing that it accounts for a great deal of variance.” That said, our effect sizes were modest in the experiment and thus, efforts to replicate these findings would be useful.

Study 1 is, of course, vulnerable to the selection concerns that are commonly associated with observational studies. Assessing collectivism through the use of country-level Hofstede scores also represents a somewhat blunt approach, insofar as there is clearly variance in collectivism between individuals of the same nationality. In essence, our research design for Study 1 sacrifices depth, in terms of a more granular measure of norms, for breadth, by enabling us to conduct a large-scale group study. Further, because people are not randomly assigned to mountaineering expeditions, and because our research objectives precluded the use of a small number of climbers from the initial sample who hail from countries without Hofstede scores, we cannot make strong causal claims with respect to collectivism’s influence on real-life Himalayan climbing outcomes. The corroborating evidence we obtained from our second study, which was experimental in nature, brings us much closer to this desired outcome. The performance outcomes in Study 2, of course, were simulated and thus somewhat artificial, limiting the generalizability of the findings. Together, however, studies 1 and 2 both confirm and complement each other in supporting our theory.

Finally, we note that our results suggest several opportunities for future research. First, because we only tested our theory with respect to two demographic attributes, future research could explore how collectivism influences the diversity-performance relationship using other relations- and task-oriented attributes such as gender and tenure and actual informational diversity. There is already some evidence that collectivism may combine differently with different attributes, for example, Ely (2004) found no

main effect for sex and race but did find negative effects on group performance for age, education, and tenure. These may be explained by considering the moderating effect of collectivism. Further, the present research did not address the question of whether collectivism blurs all types of diversity equally, a fruitful line of inquiry, as it is plausible that some distinctions are more resistant to the blurring effect. And, though our empirical tests and results support perceived diversity as a novel and important mechanism, it likely does not preclude the existence of other mechanisms by which collectivism operates such as conformity and superordinate goals.

Second, given that one of the primary means for uniting diverse groups is emphasizing collective goals, future research may include experiments that examine the comparative impact of emphasizing other norms such as valuing diversity or political correctness, that encourage cooperation but enable members to still feel comfortable expressing defiant or unpopular topics without fear of rejection (Goncalo et al. 2015, Homan et al. 2007). Additionally, research might explore how to inoculate diverse groups against performance-reducing blurring by highlighting important differences to the task and why diverse members of the group were chosen for the task (Flynn et al. 2001).

Third, the means by which perceived diversity is reduced should be further investigated. One key question is whether attention is motivated or not—that is, do people blur demographic distinctions because collectivism motivates them to do so, or as the result of what is effectively a cognitive bias? A second question revolves around the individual level process of blurring. Our study, conducted at the group level, did not distinguish between whether the effects of collectivism on perceived diversity occur because individuals fail to seek out task-relevant and potentially non-redundant information from *other* group members or because individuals fail to put forth task-relevant and potentially non-redundant information that they *themselves* possess to the group. Further, though our measure captured blurring rather than ignoring, since ignoring others' differences would imply that subjects perceived the differences but failed to use them, it would be useful to conduct a direct test. Relatedly, though not tested here, our findings pose a potential explanation for why cultures that emphasize a norm to be collectivistic (particularly popular among startups in Silicon Valley) may struggle to attract a diverse employee base (Guynn 2017): Their collectivistic cultures may blind them to the presence - or lack thereof - of diversity among their employees.

Finally, we agree with Van Dijk et al. (2012) that diversity research would benefit from more carefully considering what “performance” in a given research context means. Disaggregating performance outcomes in terms of how they are achieved - in a conjunctive or disjunctive manner - represents a first step in this direction, but there are other relevant distinctions in performance outcomes such as whether performance has social impact or frame-breaking potential. Doing so could improve organizational scholars’ ability to make more consistently precise predictions regarding group diversity and performance—a goal that remains elusive despite years of scholarly attention.

Conclusion

We develop and test a theory of when and why collectivism will help or hurt group outcomes. Specifically, we show that collectivism leads members to blur the diversity attributes of members of their group, which improves performance when diversity is disruptive and hurts performance on tasks on which accurate perceptions of diversity are critical. In sum, we provide the foundation for a broad-range theory of how group collectivistic norms can help or harm groups’ abilities to benefit from the diversity within their groups.

REFERENCES

- Allport GW (1954) *The Nature of Prejudice* (Addison-Wesley, Reading, MA).
- Anicich EM, Swaab RI, Galinsky AD (2015) Hierarchical cultural values predict success and mortality in high-stakes teams. *Proc. Natl. Acad. Sci. U.S.A.* 112(5):1338-1343.
- Bartel CA (2001) Social comparisons in boundary-spanning work: Effects of community outreach on members' organizational identity and identification. *Admin. Sci. Quart.* 46(3):379-413.
- Bass M, De Dreu CKW, Nijstad BA (2008) A meta-analysis of 25 years of mood-creativity research: Hedonic tone, activation, or regulatory focus? *Psychol. Bull.* 134(6):779-806.
- Bell ST (2007) Deep-level composition variables as predictors of team performance: A meta-analysis. *J. Appl. Psychol.* 92(3):595-615.
- Bell ST, Villado AJ, Lukasik MA, Belau, L, Briggs A (2011) Getting specific about demographic diversity variable and team performance relationships: A meta-analysis. *J. Management* 37(3):709-743.
- Betancourt H, Lopez HR (1993) The study of culture, ethnicity, and race in American psychology. *Am. Psychol.* 48(6):629-637.
- Blau PM (1977) *Inequality and heterogeneity: A primitive Theory of Social Structure* (Free Press, New York).
- Brewer, MB (2011) Optimal distinctiveness theory: Its history and development. Van Lange PA, Kruglanski AW, Higgins ET, eds. *Handbook of theories of social psychology: Volume 2* (Sage Publications, Los Angeles), 81-98.
- Brockner J, Higgins ET, Low MB (2004) Regulatory focus theory and the entrepreneurial process. *J. Bus. Venturing* 19(2):203-220.
- Bunderson JS, Sutcliffe KM (2002) Comparing alternative conceptualizations of functional diversity in management teams: Process and performance effects. *Acad. Manage. J.* 45(5):875-893.
- Chatman JA, Polzer JT, Barsade SG, Neale MA (1998) Being different yet feeling similar: The influence of demographic composition and organizational culture on work processes and outcomes. *Admin. Sci. Quart.* 43(4):749-780.
- Chen CC, Chen XP, Miendl JR (1998) How can cooperation be fostered? The cultural effects of individualism-collectivism. *Acad. Manage. Rev.* 23(2):285-304.
- Chua RY, Roth Y, Lemoine JF (2015) The impact of culture on creativity: How cultural tightness and cultural distance affect global innovation crowdsourcing work. *Admin. Sci. Quart.* 60(2):189-227.
- Cialdini RB, Reno RR, Kallgren CA (1990) A focus theory of normative conduct: Recycling the concept of norms to reduce littering in public places. *J. Pers. Soc. Psychol.* 58(6):1015-1026.
- Connally, C (2005) *The mountaineering handbook: Modern tools and techniques that will take you to the top* (Ragged Mountain Press/McGraw-Hill, Camden, ME).
- Daniels DP, Neale MA, Greer LL (2017) Spillover bias in diversity judgment. *Organ. Behav. Hum. Decis. Process.* 139:92-105.
- De Dreu CK, West MA (2001) Minority dissent and team innovation: The importance of participation in decision making. *J. Appl. Psychol.* 86(6):1191-1201.
- De Dreu CK, Weingart LR (2003) Task versus relationship conflict, team performance, and team member satisfaction: A meta-analysis. *J. Appl. Psychol.* 88(4):741-749.
- Earley PC (1989) Social loafing and collectivism: A comparison of the United States and the People's Republic of China. *Admin. Sci. Quart.* 34(4):565-581.
- Earley PC (1993) East meets West meets Mideast: Further explorations of collectivistic and individualistic work groups. *Acad. Manage. J.* 36(2):319-348.
- Eby LT, Dobbins GH (1997) Collectivistic orientation in teams: An individual and group-level analysis. *J. Organ. Behav.* 18(3):275-295.
- Ellemers N, De Gilder D, Haslam SA (2004) Motivating individuals and groups at work: A social identity perspective on leadership and group performance. *Acad. Manage. Rev.* 29(3):459-478.
- Ely RJ (2004) A field study of group diversity, participation in diversity education programs, and performance. *J. Organ. Behav.* 25(6):755-780.
- Ely RJ, Meyerson DE (2010) Theories of gender in organizations: A new approach to organizational analysis and change. *Res. Organ. Behav.* 22:103-151.
- Ely RJ, Thomas DA (2001) Cultural diversity at work: The effects of diversity perspectives on work group processes and outcomes. *Admin. Sci. Quar.* 46(2): 229-273.
- Faddegon K, Ellemers N, Scheepers D (2009) Eager to be the best, or vigilant not to be the worst: The emergence of regulatory focus in disjunctive and conjunctive group tasks. *Group Processes & Intergroup Relations.* 12(5):653-671.
- Fiske ST, Markus HR (2012) *Facing Social Class: How Societal Rank Influences Interaction* (Russell Sage Foundation, New York, NY).
- Flynn FJ, Chatman JA, Spataro SE (2001) Getting to know you: The influence of personality on impressions and performance of demographically different people in organizations. *Admin. Sci. Quart.* 46(3):414-442.

- Friedman RS, Forster J (2001) The effects of promotion and prevention cues on creativity. *J. Pers. Soc. Psychol.* 81(6):1001-1013.
- Frank F, Anderson LR (1971) Effects of task and group size upon group productivity and member satisfaction. *Sociometry* 34(1):135-149.
- Fu JH, Morris MW, Lee SI, Chao M, Chiu C (2007) Epistemic motives and cultural conformity: Need for closure, culture, and context as determinants of conflict judgments. *J. Pers. Soc. Psychol.* 92(2):191-207.
- Gaertner SL, Dovidio JF, Banker BS, Houlette M, Johnson KM, McGlynn EA (2000) Reducing intergroup conflict: From superordinate goals to decategorization, recategorization, and mutual differentiation. *Group Dyn.* 4(1): 98-114.
- Galinsky AD, Leonardelli GJ, Okhuysen GA, Mussweiler T (2005) Regulatory focus at the bargaining table: Promoting distributive and integrative success. *Pers. Soc. Psychol. B.* 31(8):1087-1098.
- Gardner HK (2012) Performance pressure as a double-edged sword: Enhancing team motivation but undermining the use of team knowledge. *Admin. Sci. Quart.* 57(1):1-46.
- Gelfand MJ, Nishii L, Raver JL (2006) On the nature and importance of cultural tightness-looseness. *J. Appl. Psychol.* 91(6):1225-1244.
- Gibson CB, Gibbs JL (2006) Unpacking the concept of virtuality: The effects of geographic dispersion, electronic dependence, dynamic structure and national diversity on team innovation. *Admin. Sci. Quart.* 51(3):451-495.
- Gomez C, Kirkman BL, Shapiro DL (2000) The impact of collectivism and in-group/out-group membership on the evaluation generosity of team members. *Acad. Manage. J.* 43(6):1097-1106.
- Goncalo JA, Staw BM (2006) Individualism-collectivism and group creativity. *Organ. Behav. Hum. Dec.* 100(1):96-109.
- Goncalo JA, Chatman JA, Duguid MM, Kennedy JA (2015) Creativity from constraint? How the political correctness norm influences creativity in mixed-sex work groups. *Admin. Sci. Quart.* 60(1):1-30.
- Goncalo JA, Polman E, Maslach C (2010) Can confidence come too soon? Collective efficacy, conflict and group performance over time. *Organ. Behav. Hum. Dec.* 113(1):13-24.
- Gong Y (2006) The impact of subsidiary top management team national diversity on subsidiary performance: Knowledge and legitimacy perspectives. *Manage. Int. Rev.* 46(6):771-790.
- Greer LL, DeJong BA, Schouten ME, Dannals J (2018) Why and when hierarchy impacts team effectiveness: A meta-analytic integration. *J. Appl. Psychol.* 103: 591-613.
- Guynn, J (2017) Silicon Valley's race gap is getting worse, not better, new research shows. *USA Today* (Oct. 3).
- Hall J, Watson WH (1970) The effects of a normative intervention on group decision-making performance. *Hum. Relat.* 23(4):299-317.
- Hayes AF (2017) *Introduction to mediation, moderation, and conditional process analysis*, 2nd ed. (Guilford Press, New York, NY).
- Hinsz VB, Tindale RS, Vollrath DA (1997) The emerging conceptualization of groups as information processors. *Psychol. Bull.* 121(1):43-64.
- Hofstede G (2001) *Culture's consequences: Comparing values, behaviors, institutions and organizations across nations* (Sage Publications, Thousand Oaks, CA).
- Hofstede G, Spangenberg J (1987) Measuring individualism and collectivism at occupational and organizational levels. Kagitcibasi C, ed. *Growth and Progress in Cross-cultural Psychology* (Swets & Zeitlinger, Netherlands), 113-122.
- Homan AC, Greer LL (2013) Considering diversity: The positive effects of considerate leadership in diverse teams. *Group Process. Intergr. Relat.* 16(1):105-125.
- Homan AC, Hollenbeck JR, Humphrey SE, van Knippenberg D, Ilgen DR, van Kleef GA (2007) Facing differences with an open mind: Openness to experience, salience of intragroup differences, and performance in diverse work groups. *Acad. Manage. J.* 51(6):1204-1222.
- Homan AC, Greer LL, Jehn KA, Koning L (2010) Believing shapes seeing: The impact of diversity beliefs on the construal of group composition. *Group Process. Intergroup Relat.* 13(4):477-493.
- Hornsey MJ, Hogg MA (2000) Subgroup relations: A comparison of mutual intergroup differentiation and common ingroup identity models of prejudice reduction. *Pers. Soc. Psychol. B.* 26(2):242-256.
- Horwitz SK, Horwitz IB (2007) The effects of team diversity on team outcomes: A meta-analytic review of team demography. *J Management*, 33(6), 987-1015.
- Huey RB, Salisbury R, Wang JL, Mao M (2007) Effects of age and gender on success and death of mountaineers on Mount Everest. *Biol. Letters* 3(5):498-500.
- Ilies R, Wagner DT, Morgeson FP (2007) Explaining affective linkages in teams: Individual differences in susceptibility to contagion and individualism-collectivism. *J. Appl. Psychol.* 92(4):1140-1148.
- Jackson CL, Colquitt JA, Wesson MJ, Zapata-Phelan CP (2006) Psychological collectivism: A measurement validation and linkage to group member performance. *J. Appl. Psychol.* 91(4):884-899.
- Jackson SE, May KE, Whitney K (1995) Understanding the dynamics of diversity in decision-making teams. Guzzo RA, Salas E, eds. *Team Effectiveness and Decision Making in Organizations* (Jossey Bass, San Francisco, CA), 204-261.
- Jehn KA, Bezrukova K (2010) The faultline activation process and the effects of activated Faultlines on coalition formation, conflict, and group outcomes. *Organ. Behav. Hum. Dec.* 112(1):24-42.

- Jehn KA, Northcraft GB, Neale MA (1999) Why differences make a difference: A field study of diversity, conflict and performance in workgroups. *Admin. Sci. Quart.* 44(4):741-763.
- Jetten J, Postmes T, McAuliffe BJ (2002) 'We're all individuals': Group norms of individualism and collectivism, levels of identification, and identity threat. *Eur. J. Soc. Psychol.* 32(2):189-207.
- Jolly J (2010) Elizabeth Hawley, unrivalled Himalayan record keeper. *BBC News*, Kathmandu.
- Joshi A, Roh H (2009) The role of context in work team diversity research. *Acad. Manage. J.* 52(3):599-627.
- Kalmijn M, Van Tubergen F (2010) A comparative perspective on intermarriage: Explaining differences among national-origin groups in the United States. *Demography* 47(2):459-479.
- Kashy DA, Kenny DA (2000) The analysis of data from dyads and groups. Reis HT, Judd CM, eds. *Handbook of Research Methods in Social and Personality Psychology* (Cambridge University Press, Cambridge, UK), 451-477.
- Keltner D, Van Kleef GA, Chen S, Kraus MW (2008) A reciprocal influence model of social power: Emerging principles and lines of inquiry. *Advances in experimental social psychology*, 40, 151-192.
- Kerr NL, Bruun SE (1983) Dispensability of member effort and group motivation losses: Free-rider effects. *J. Pers. Soc. Psychol.* 44(1):78.
- Kim U, Triandis HC, Kâğıtçıbaşı C, Choi SC, Yoon G (1994) *Individualism and Collectivism: Theory, method, and applications* (Sage Publications, Thousand Oaks, CA).
- Kirkman BL, Lowe KB, Gibson CB (2006) A quarter century of culture's consequences: A review of empirical research incorporating Hofstede's cultural values framework. *J. Int. Bus. Stud.* 37(3):285-320.
- Krakauer J (1997) *Into Thin Air: A Personal Account of the Mt. Everest Disaster* (Random House, New York, NY).
- Lawrence BS (1997) The black box of organizational demography. *Organ Sci.* 8(1):1-22.
- Lawler EJ (2005) Role of status in group processes. In *Status and groups* (pp. 315-325). Emerald Group Publishing Limited.
- Lee L, Ward C (1998) Ethnicity, ideocentrism-allocentrism, and intergroup attitudes. *J. Appl. Psychol.* 28(2):109-123.
- Leonardelli GJ, Pickett CL, Brewer MB (2010) Optimal distinctiveness theory: A framework for social identity, social cognition, and intergroup relations. Zanna MP, Olson JM, eds. *Advances in Experimental Social Psychology* (Academic Press, San Diego, CA), 63-113.
- LePine JA, Hollenbeck JR, Ilgen DR, Hedlund J (1997) Effects of individual differences on the performance of hierarchical decision-making teams: Much more than g. *J. Appl. Psychol.* 82(5):803-811.
- LePine JA, Piccolo RF, Jackson CL, Methot JR (2008) A meta-analysis of teamwork processes: Tests of a multidimensional model and relationships with team effectiveness criteria. *Personnel Psychology*, 61(2):273-307.
- Littlepage GE (1991) Effects of group size and task characteristics on group performance: A test of Steiner's model. *Pers. Soc. Psychol. Bull.* 17(4), 449-456.
- Madsen PM, Desai V (2010) Failure to learn? The effects of failure and success on organizational learning in the global orbital launch vehicle industry. *Acad. Manage. J.* 53(3):451-476.
- Mannix E, Neale MA (2005) What difference makes a difference? The promise and reality of diverse teams in organizations. *Psychol. Sci. Pub. Interest* 6(2):31-55.
- Marcus J, Le H (2013) Interactive effects of levels of individualism–collectivism on cooperation: A meta-analysis. *J. Organiz. Behav.* 34(6):813-834.
- Markus HR, Kitayama S (1991) Culture and the self: Implications for cognition, emotion, and motivation. *Psych. Rev.* 98(2):224-253.
- Martin AE, Phillips KW (2017) What "blindness" to gender differences helps women see and do: Implications for confidence, agency, and action in male-dominated environments. *Organ. Behav. Hum. Dec.* 142:28-44.
- McGrath JE, Berdahl JL, Arrow H (1995) Traits, expectations, culture, and clout: The dynamics of diversity in work groups. In Jackson SE, Ruderman MN, eds. *Diversity in Work Teams: Research Paradigms for a Changing Workforce* (American Psychological Association, Washington, DC), 17-45.
- Mead, M (1976) *Cooperation and Competition Among Primitive People* (Beacon Press, Boston, MA).
- Miller CE, Komorita SS (1995) Reward allocation in task-performing groups. *J. Pers. Soc. Psychol.* 69(1):80.
- Molden DC, Higgins ET (2005) Motivated thinking. Holyoak K, Morrison B, eds. *The Cambridge Handbook of Thinking and Reasoning* (Cambridge University Press, Cambridge, UK), 295-320.
- Morris MW, Hong Y, Chiu C, Liu Z (2015) Normology: Integrating insights about social norms to understand cultural dynamics. *Organ. Behav. Hum. Dec.* 129:1-13.
- Morris MW, Peng K (1994) Culture and cause: American and Chinese attributions for social and physical events. *J. Pers. Soc. Psychol.* 67(6):949-971.
- Nemeth CJ, Kwan JL (1987) Minority influence, divergent thinking and detection of correct solutions. *J. Appl. Soc. Psychol.* 17(9):788-799.
- Ng KY, Van Dyne L (2001) Individualism-collectivism as a boundary condition for effectiveness of minority influence in decision making. *Organ. Behav. Hum. Dec.* 84(2):198-225.
- Oyserman D, Coon HM, Kimmelmeier M (2002) Rethinking individualism and collectivism: Evaluation of theoretical assumptions and meta-analyses. *Psychol. Bull.* 128(1):3-72.

- Pelled LH, Eisenhardt KM, Xin KR (1999) Exploring the black box: An analysis of work group diversity, conflict, and performance. *Admin. Sci. Quart.* 44(1):1-28.
- Pfeffer J (1983) Organizational demography. *Res. Organ. Behav.* 5:299-357.
- Phillips K W, Loyd DL (2006) When surface and deep-level diversity collide: The effects on dissenting group members. *Organ. Behav. Hum. Dec.* 99(2):143-160.
- Phillips KW, Mannix EA, Neale MA, Gruenfeld DH (2004) Diverse groups and information sharing: The effects of congruent ties. *J. Exp. Soc. Psychol.* 40(4):497-510.
- Phillips LT, Slepian ML, Hughes BL (2018) Perceiving groups: The people perception of diversity and hierarchy. *J. Pers. Soc. Psychol.* 114(5): 766-785.
- Pieterse AN, Van Knippenberg D, Van Dierendonck D (2013) Cultural diversity and team performance: The role of team member goal orientation. *Acad. Manage. J.* 56(3):782-804.
- Polzer JT, Milton LP, Swarm WBJr (2002). Capitalizing on diversity: Interpersonal congruence in small work groups. *Admin. Sci. Quart.* 47(2):296-324.
- Prentice DA, Miller DT (1992) When small effects are impressive. *Psychol. Bull.* 112(1):160.
- Redding SG (1993) *The spirit of Chinese capitalism* (Walter de Gruyter, New York, NY).
- Salisbury R, Hawley E (2004 [2013]) *The Himalayan Database: The Expedition Archives of Elizabeth Hawley* (American Alpine Club Press, Golden, CO).
- Shemla M, Meyer B (2012) Bridging diversity in organizations and cross-cultural work psychology by studying perceived differences. *Ind. Organ. Psychol.* 5(3):370-372.
- Shemla M, Meyer B, Greer L, Jehn K (2016) A review of perceived diversity in teams: Does how members perceive their team's composition affect team processes and outcomes? *J. of Organ. Behav.* 37(S1):S89-S106.
- Shteynberg G, Gelfand MJ, Kim K (2009) Peering into the "magnum mysterium" of culture: The explanatory power of descriptive norms. *J. Cross. Cult. Psychol.* 40:46-69.
- Staats BR, Milkman KL, Fox CR (2012) The team scaling fallacy: Underestimating the declining efficiency of larger teams. *Organ. Behav. Hum. Dec.* 118(2):132-142.
- Steiner ID (1972) *Group Process and Productivity* (Academic Press, New York, NY).
- Thompson L, Peterson E, Brodt SE (1996) Team negotiation: An examination of integrative and distributive bargaining. *J. Pers. Soc. Psychol.* 70(1):66.
- Triandis HC (1990) Cross-cultural studies of individualism and collectivism. Berman JJ, ed. *Current theory and research in motivation, Vol. 37* (University of Nebraska Press, Lincoln, NE), 41-133.
- Triandis HC (1995) *Individualism and Collectivism* (Westview Press, Boulder, CO).
- Triandis HC, Suh EM (2002) Cultural influences on personality. *Annu. Rev. Psychol.* 53:133-160.
- Tsui AS, Egan RD, O'Reilly CA (1992) Being different: Relational demography and organizational attachment. *Admin. Sci. Quart.* 37(4):549-579.
- Tyler TR (1987) Conditions leading to value-expressive effects in judgments of procedural justice: A test of four models. *J. Pers. Soc. Psychol.* 52(2):333.
- Van Bunderen L, Lindred GL, Van Knippenberg D (2018) When interteam conflict spirals into intrateam power struggles: the pivotal role of team power structures. *Acad Manage. J.* 61(3):1100-1130.
- Van Der Veegt GS, Van De Vliert E, Huang X (2005) Location-level links between diversity and innovative climate depend on national power distance. *Acad. Manage. J.* 48(6):1171-1182.
- Van Der Veegt GS, Bunderson JS, Oosterhof A (2006) Expertness diversity and interpersonal helping in teams: Why those who need the most help end up getting the least. *Acad. Manage. J.* 49(5):877-893.
- Van Dijk H, Van Engen ML, Van Knippenberg D (2012) Defying conventional wisdom: A meta-analytical examination of the differences between demographic and job-related diversity relationships with performance. *Organ. Behav. Hum. Dec.* 119(1):38-53.
- Van Knippenberg D, De Dreu CK, Homan AC (2004) Work group diversity and group performance: An integrative model and research agenda. *J. Appl. Psychol.* 89(6):1008-1022.
- Wallace C, Chen G (2006) A multilevel integration of personality, climate, self-regulation, and performance. *Pers. Psychol.* 59(3):529-557.
- Wagner JA (1995) Studies of individualism-collectivism: Effects on cooperation in groups. *Acad. Manage.* 38:152-173.
- Wang J, Lee AY (2006) The role of regulatory focus in preference construction. *J. Market. Res.* 43(1):28-38.
- Weber B, Hertel G (2007). Motivation gains of inferior group members: a meta-analytical review. *J. Pers. Soc. Psychol.* 93(6):973.
- Williams KY, O'Reilly CA (1998) Demography and diversity in organizations: A review of 40 years of research. *Res. Organ. Behav.* 20:77-140.
- Wooldridge JM (2010) *Econometric Analysis of Cross Section and Panel Data* (MIT Press, Boston MA).
- Yamaguchi S (1994) Collectivism among the Japanese: A perspective from the self. Triandis HC, Kâğitçibaşı C, Choi S-C, Yoon G (eds.) *Cross-cultural research and methodology series, Vol. 18. Individualism and collectivism: Theory, method, and applications* (Sage publications, Thousand Oaks, CA), 175-188.

Zellmer-Bruhn ME, Maloney MM, Bhappu AD, Salvador R (2008) When and how do differences matter? An exploration of perceived similarity in teams. *Organ. Behav. Hum. Dec.* 107(1):41-59.

Table 1 – Means, Standard Deviations, and Correlations for Key Variables – Study 1

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Average age	-													
2. Proportion female	.14**	-												
3. Group size	-.04**	.00	-											
4. Expertise ratio	.19**	-.03*	-.09**	-										
5. Oxygen ratio	.14**	.09**	.13**	.20**	-									
6. Support ratio	.25**	.14**	-.04**	.10**	.53**	-								
7. Commercial expedition	.29**	.11**	.18**	.05**	.24**	.24**	-							
8. Collectivism	-.14**	-.07**	.03*	.02	.03*	.03*	-.31**	-						
9. Objective national diversity	.15**	.09**	.16**	.14**	.19**	.13**	.47**	-.31**	-					
10. Objective expertise diversity	.10**	.06**	.34**	-.09**	.04**	.00	.23**	.16**	-.06**	-				
11. Collectivism x Objective national diversity	.02	.03	-.06**	-.06**	-.18**	-.16**	-.21**	-.33**	-.08**	-.24**	-			
12. Collectivism x Objective expertise diversity	-.05**	.00	.03*	-.03	-.04*	-.05**	-.13**	-.07**	.05**	-.01	.12**	-		
13. Summit ratio	.07	.08**	-.03**	.10**	.31**	.27**	.17**	.10**	-.01	.00	-.06**	-.04**	-	
14. Climber safety	.08**	.06**	-.12**	.02	.00	.04**	.05**	.02	-.05**	-.07**	.01	-.04**	.09**	-
<i>M</i>	37.16	0.10	7.45	0.41	0.14	0.22	0.20	0.30	0.17	1.31	-1.60	-1.15	0.32	0.07
<i>SD</i>	7.14	0.15	4.81	0.32	0.29	0.31	0.40	0.21	0.25	0.93	4.30	19.66	0.35	0.25

* $p < .05$. ** $p < .01$. $n = 5,214$.

Table 2 – Estimates of National and Expertness Diversity on Summitting Success and Climber Safety – Study 1

Variables	(1)	(2)	(3)	(4)	(5)	(6)
	Summitting Success	Summitting Success	Summitting Success	Climber Safety	Climber Safety	Climber Safety
Average age	-0.006** (0.001)	-0.005** (0.001)	-0.005** (0.001)	0.000 (0.001)	0.000 (0.001)	0.000 (0.001)
Proportion female	-0.032 (0.029)	-0.026 (0.029)	-0.031 (0.029)	0.039 † (0.020)	0.037 † (0.020)	0.038 † (0.020)
Group size	0.001 (0.001)	0.001 (0.001)	0.001 (0.001)	-0.005** (0.001)	-0.004** (0.001)	-0.004** (0.001)
Simple experience	0.131** (0.016)	0.126** (0.016)	0.125** (0.016)	0.013 (0.012)	0.012 (0.012)	0.011 (0.012)
Oxygen ratio	0.501** (0.021)	0.498** (0.021)	0.501** (0.021)	-0.006 (0.017)	-0.005 (0.017)	-0.006 (0.017)
Support ratio	0.168** (0.018)	0.160** (0.019)	0.164** (0.019)	0.016 (0.013)	0.019 (0.013)	0.018 (0.013)
Commercial expedition	0.009 (0.012)	0.021 (0.013)	0.027* (0.013)	0.013 (0.008)	0.009 (0.010)	0.005 (0.010)
Collectivism		0.088** (0.022)	0.118** (0.024)		-0.050** (0.019)	-0.056** (0.020)
Objective national diversity		0.023 (0.020)	0.048* (0.022)		-0.007 (0.017)	-0.011 (0.019)
Objective expertness diversity		-0.007 (0.005)	-0.006 (0.005)		-0.010* (0.005)	-0.010* (0.005)
Collectivism × Objective national diversity			0.373** (0.114)			-0.054 (0.090)
Collectivism × Objective expertness diversity			-0.007 (0.020)			-0.041* (0.019)
Observations	5214	5214	5214	5214	5214	5214
Adjusted R^2	0.318	0.320	0.321	0.050	0.052	0.053

Robust standard errors in parentheses

† $p < .10$, * $p < .05$, ** $p < .01$ **Table 3** – Means, Standard Deviations, and Correlations for Key Variables – Study 2

Variable	1	2	3	4
1. Perceived national diversity	-			
2. Perceived expertness diversity	.05	-		
3. Conjunctive group performance	-.11*	.04	-	
4. Disjunctive group performance	-.02	.11*	-.02	-
<i>M</i>	0.62	0.81	0.56	0.20
<i>SD</i>	0.28	0.27	0.17	1.13

* $p < .05$, ** $p < .01$. $n = 366$ groups.

Table 4 – Effects of Collectivism and Objective Diversity on Perceived Diversity, and Conjunctive Task (Oxygen Allocation) and Disjunctive Task (Route Selection) Performance – Study 2

Variables	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
	Perceived National Diversity	Perceived Expertness Diversity	Conjunctive Task Performance	Conjunctive Task Performance	Conjunctive Task Performance	Disjunctive Task Performance	Disjunctive Task Performance	Disjunctive Task Performance
Collectivism Manipulation	-0.073 (0.014)	-0.117* (0.013)	0.101 † (0.009)	0.101 † (0.009)	0.089 † (0.009)	0.063 (0.059)	0.063 (0.059)	0.071 (0.059)
Objective National Diversity Manipulation	-0.352*** (0.017)	0.004 (0.016)	-0.069 (0.011)	-0.067 (0.011)	-0.113 † (0.012)	-0.120 (0.072)	-0.121* (0.072)	-0.140* (0.076)
Objective Expertness Diversity Manipulation	-0.021 (0.017)	-0.366*** (0.016)	-0.027 (0.011)	-0.026 (0.011)	-0.038 (0.012)	-0.174** (0.072)	-0.173** (0.072)	-0.136* (0.076)
Collectivism Manipulation × Objective National Diversity Manipulation	-0.173** (0.017)	0.007 (0.016)		-0.007 (0.011)	-0.029 (0.011)		-0.022 (0.072)	-0.032 (0.073)
Collectivism Manipulation × Objective Expertness Diversity Manipulation	-0.021 (0.017)	-0.131* (0.016)		-0.082 (0.011)	-0.088 (0.011)		0.034 (0.072)	0.047 (0.072)
Perceived National Diversity					-0.132* (0.035)			-0.054 (0.227)
Perceived Expertness Diversity					-0.023 (0.037)			0.106 † (0.143)
Observations	366	366	366	366	366	366	366	366
Adjusted R^2	0.13	0.15	0.01	0.01	0.02	0.02	0.03	0.03

† $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$.

Figure 1A: Effects of Collectivism on Summitting Success in Nationally Diverse Groups – Study 1

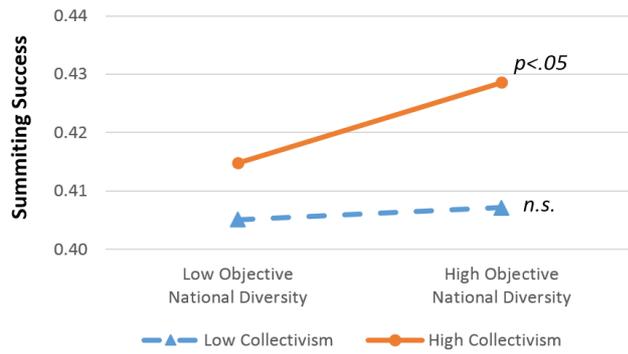


Figure 1B: Effects of Collectivism on Climber Safety in Expertness-Diverse Groups – Study 1

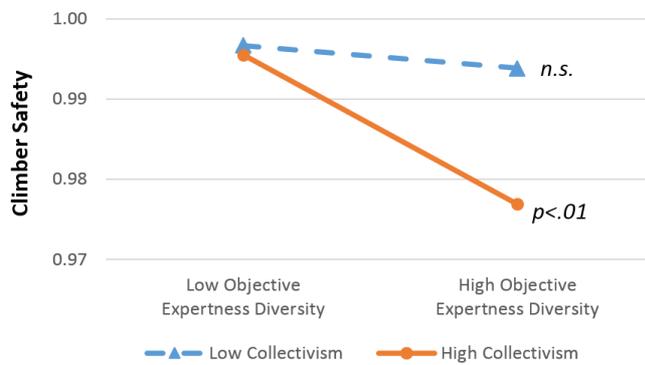


Figure 2A: Effects of Collectivism on Perceived National Diversity – Study 2

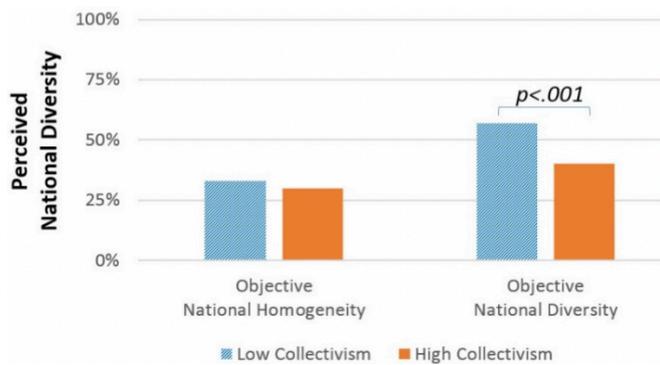


Figure 2B: Effects of Collectivism on Perceived Expertness Diversity – Study 2

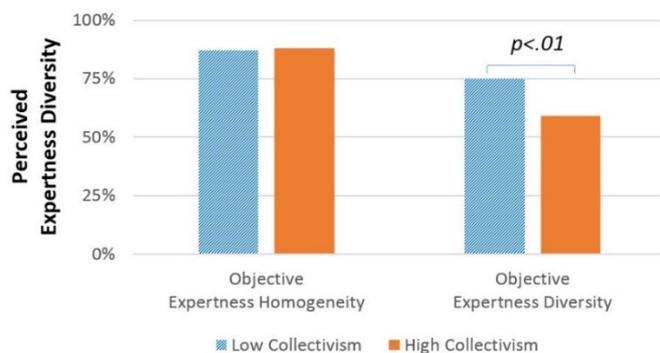
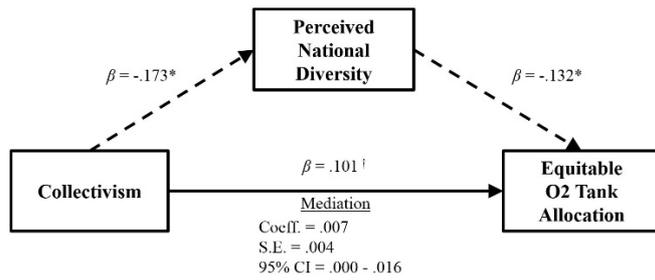
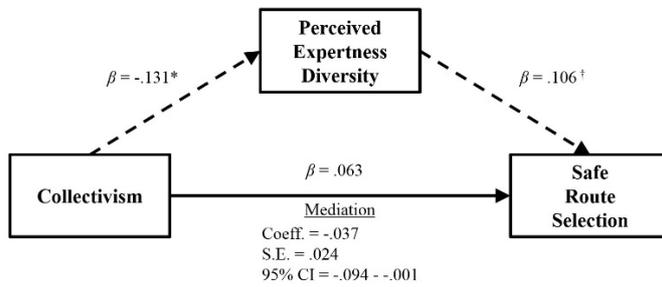


Figure 3A: Effects of Collectivism on Conjunctive Task Performance in Nationally Diverse Groups – Study 2



Mediation determined using Hayes macro with 5,000 bootstrapped iterations.
[†] $p < .10$, * $p < .05$, ** $p < .01$

Figure 3B: Effects of Collectivism on Disjunctive Task Performance in Expertness-Diverse Groups – Study 2



Mediation determined using Hayes macro with 5,000 bootstrapped iterations.
[†] $p < .10$, * $p < .05$, ** $p < .01$, *** $p < .001$

Appendix 1: Moon Landing Scenario

1A: Characteristics of Six Conditions

<u>Characteristics</u>	<u>C1</u>	<u>C2</u>	<u>C3</u>	<u>C4</u>	<u>C5</u>	<u>C6</u>
Norms: Individualistic	X	X	X			
Norms: Collectivistic				X	X	X
Nationalities: Homogeneous	X	X		X	X	
Nationalities: Heterogeneous			X			X
Expertness Levels: Homogeneous	X		X	X		X
Expertness Levels: Heterogeneous		X			X	
Subjects in Condition	168	177	186	183	180	174
Groups in Condition	56	59	62	61	60	58

1B: Narrative Description of Group Behavior

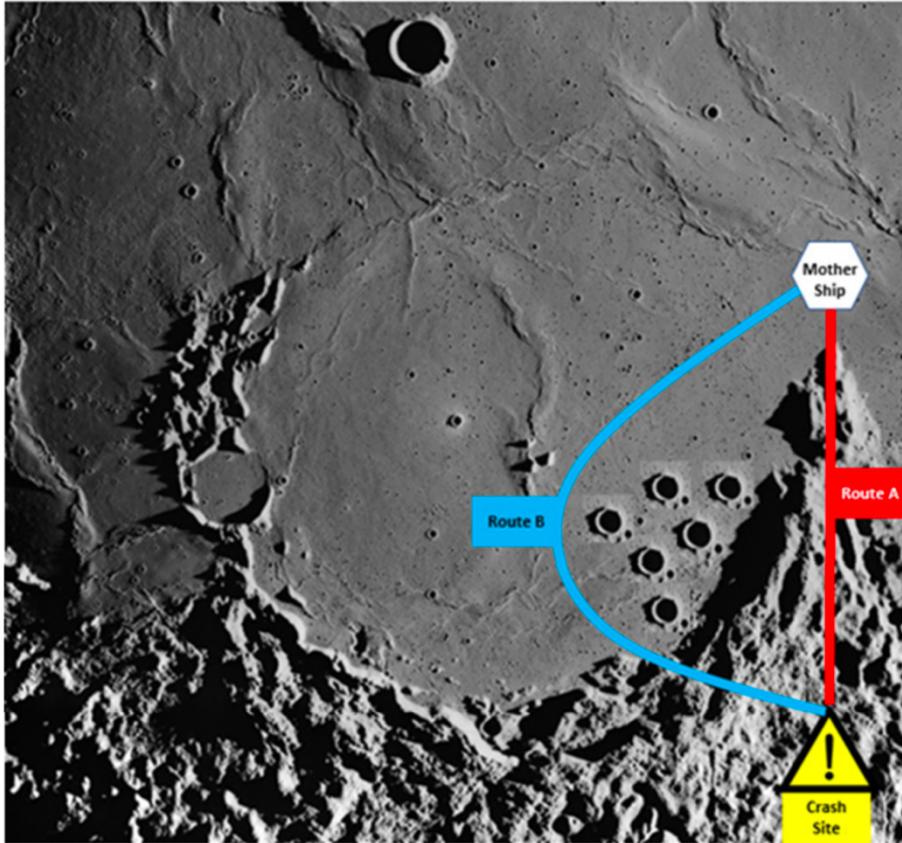
You and your crew mates have been in outer space together for the past five months. The following diary of one of your crew mates reflects how the group has worked together during that time.

COLLECTIVISM CONDITION	INDIVIDUALISM CONDITION
<p><i>We each have a small cabin in which we can sleep and keep our personal effects (family photos, etc.), but this crew is remarkably communal. On the first day of the mission, we removed the doors from our individual chambers, and brought most of our personal things to the common spaces to share. This is very different from the isolated pods I recall having seen on videos of other expeditions.</i></p> <p><i>In this way, it really seems like our group has invested the space vessel with a very collaborative atmosphere. In the common space, there is a large wall with clips holding various types of freeze-dried food – oh, the delights of astronaut cuisine! We not only eat meals together, but we eat the same thing as each other so we have a more shared experience. (We rotate the task of “preparing meals for the crew.”)</i></p> <p><i>On days when the weather outside the vessel has been particularly bad such that visibility is low, group zero-gravity hacky-sack and blackjack have become regular pastimes. Every day it seems we have some group activity going on. It seems life on the space vessel is not so different from life at home on earth.</i></p>	<p><i>We each have a small cabin in which we can sleep and keep our personal effects (family photos, etc.), and these spaces go a long way to help us retain a sense of individuality. On the first day of the mission, we briefly opened the doors to our individual chambers and showed each other our personal things as a “getting-to-know-you tour,” but I haven’t seen my crewmates’ space since then as we typically keep our cabin doors closed. This is very different from the more communal atmosphere I recall having seen on videos of other expeditions.</i></p> <p><i>In this way, it really seems like our group has invested certain areas of the space vessel with a very private atmosphere. In the common space, there is a large wall with small lockers holding various types of freeze-dried food – oh, the delights of astronaut cuisine! We appear to have different appetites and cuisine preferences, so we tend to eat separately and eat different things. (At least preparing a meal for myself is not a complicated task!)</i></p> <p><i>On days when the weather outside the vessel has been particularly bad such that visibility is low, I retreat to my chamber where reading and playing solitaire have quickly become my pastimes. Every day I find time to meditate and reflect on the day’s experiences and my observations about space and the other crewmates. It seems life on the space vessel is not so different from life at home on earth.</i></p>

1C: Disjunctive Task for Subjects

Route Selection

Your space vessel landed approximately 200 miles from the rendezvous point. You no longer have a view of the terrain, but you caught a quick glimpse as you were landing. It appeared that there were two primary routes to the mother ship, as shown below.



Route A was more direct but there was a series of extremely steep mountainous ridges in the terrain along the way that your crew is uncertain about. Route B was quite a bit longer but was comparatively flat with no signs of obstruction in the terrain.