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Bridging the Boundary Without Sinking the Team: Communication, Identification, and Creativity in Multiteam Systems

Raquel Asencio[1], Toshio Murase[2], Barthelemy Chollet[3], Leslie A. DeChurch[4], and Stephen J. Zaccaro[5]

[1] Krannert School of Management, Purdue University
[2] School of Commerce, Waseda University
[3] Grenoble École de Management and Université de Savoie Mont Blanc, IREGE
[4] Department of Communication Studies, Department of Psychology, Northwestern University
[5] Department of Psychology, George Mason University

Objective: We investigate the effects of communication networks focused inside and outside the team on both team and multiteam systems (MTSs) identification and the effect of team and MTS identification on MTS creativity. ***Method:*** We use a sample of 334 individuals working in 128 project teams embedded in 32 MTSs. Participants took part in an 8-week project (M_{age} = 21; 53% females) that linked courses in Environmental Ecology, Social Psychology, and Innovation Management in two U.S.-based universities and France-based university. Psychometric measures include communication networks and team and MTS identification. Subject Matter Experts (SMEs) rated creativity of the final deliverable. ***Results:*** We find that between-team communication benefits MTS identification ($\beta = .55$, $p < .001$), but exhibits a negative curvilinear effect on team identification ($\beta = -.31$, $p = .014$). Within-team communication benefits team identification ($\beta = .43$, $p = .003$) without harming MTS identification ($\beta = .11$, $p = .444$). Additionally, we find a crossed interaction effect in predicting MTS creativity ($\beta = .39$, $p = .006$). MTSs with component teams that identified strongly with the team and system produced novel and useful ideas, but MTSs with low dual identification also demonstrated strong creativity. ***Conclusion:*** The emergence of social identification can result from the bottom-up influence of interpersonal interaction among group members. Additionally, the development of relationships between teams affects how the team develops internally. Finally, findings paint a complex picture of the identification–creativity relationship.

Highlights and Implications

- The density of communication networks within teams was positively related to team identification, and the density of communication networks within teams was positively related to multiteam systems (MTSs) identification. This suggests that dyadic relations can build collective identification from the bottom up.
- Within-team communication does not affect identification with the MTS, but between-team communication ties had a negative curvilinear relationship with

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Raquel Asencio https://orcid.org/0000-0003-2977-0757
Toshio Murase https://orcid.org/0000-0002-5581-543X
Barthelemy Chollet https://orcid.org/0000-0002-7019-8660
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Correspondence concerning this article should be addressed to Raquel Asencio, Krannert School of Management, Purdue University, 403 W. State Street, West Lafayette, IN 47907, United States. Email: rqlasencio@gmail.com

team identification—too many open communication channels between teams wash out identification with one's team.
- Identification predicts MTS creativity such that high team and MTS identification is related to more creativity, but this interaction was crossed such that low team and MTS identification also yields high creativity. This reveals a complex relationship between identification and creativity.

Keywords: teams, multiteam systems, communication networks, identification, creativity

With the growing specialization of knowledge (Jones, 2009), creative performance increasingly relies on large collectives. Although this phenomenon has been analyzed as "an increasing dominance of teams" (Wuchty et al., 2007), in fact these collectives often are assemblies of multiple specialized teams, working independently toward subgoals and interdependently toward an overarching goal (i.e., multiteam systems, MTSs, Mathieu et al., 2001). A typical instance where MTSs show their potential for creativity is new product development, such as when a marketing team works together with a team of technologists to develop a new product (Hoegl et al., 2004). According to Podolny and Hansen (2020), Apple's notorious ability to innovate is based on its teamwork structures, articulated around hundreds of specialized teams of experts (e.g., silicon design, motion sensor hardware, camera sensor design, etc.), which both develop domain-specific knowledge and collaborate to develop a key component of a new product offering (see Podolny & Hansen, 2020). Collaboration among domain specialists allows them to develop "deep expertise," through knowledge sharing and mutually learning domain-specific knowledge. Meanwhile, Apple's outstanding culture of collaboration allows these highly distinct and independent teams to debate, collaborate, and arbitrate across conflicting options, if they happen, resulting in an innovative yet coherent outcome (Podolny & Hansen, 2020).

Other examples include scientific discoveries stemming from several groups of scientists joining a multidisciplinary research project (Cummings & Kiesler, 2005). Practically, the underlying organization is usually not a multidisciplinary team, but an MTS. These projects require more than one expert in each area, given the level and complexity of domain-specific knowledge that has to be leveraged. For example, in 2015, the United Nations announced 17 Sustainable Development Goals (SDGs) to be achieved by 2030. The achievement of these global goals requires complex, interdisciplinary, interagency collaboration. In New York City, a Voluntary Local Review program brings together local governments with city coalitions, civil society, and academia, each uniquely positioned to find solutions to issues of sustainability (United Nations, 2020b). Similarly, the Partnership for Action on Green Economy (PAGE) takes five UN agencies and partners them with local governments who are seeking "technical assistance across policy development, sectoral reform, and capacity building for inclusive, green economy transitions" (United Nations, 2020a). This collaboration creates a complex web of interdependencies across specialized agencies in an effort to achieve sustainable goals.

Of course, simply bringing together these specialized component teams is not enough to result in creative outcomes. The distinctiveness of teams, each pursuing meaningful subgoals guided by distinctive norms and work processes (Mathieu et al., 2001), is known to favor motivation and idea generation within a small group (Brewer, 1991; van Knippenberg, 2000), but on the other hand, it can "lead to conflicting and distorted intergroup relations" (Richter et al., 2006, p. 1255). Thus, the challenge is to make component teams "simultaneously function effectively as part of larger systems" (Luciano et al., 2018, p. 1066) or, in other words, to ensure collaboration within and between teams simultaneously (Luciano et al., 2018; Ziegert et al., 2020). One way of meeting this challenge may be through team and MTS identification. Each component team and MTS establishes a social identity—a sense of who the team and MTS are and how they fit into the larger context (Ashforth et al., 2008). Identification with the team and MTS is the extent to which members establish a sense of "oneness" with the team and the MTS (Connaughton et al., 2012) and emotional attachment to those memberships (Tajfel, 1982)—identification grows as the group becomes self-defining and meaningful for the members

(Ashforth et al., 2008). Both team and MTS identification may play a role in reaching critical objectives. Team identification can create a tight boundary around the team that coheres members together and promotes cooperative teamwork behaviors, including coordination and the contribution of ideas (Mesmer-Magnus et al., 2018). MTS identification may ease the tension associated with working across boundaries, bond the component teams together, and motivate their efforts to integrate ideas (Connaughton et al., 2012; van Knippenberg, 2000). However, the literature on identification in MTSs is not in agreement on the role that team and MTS identification play in impacting outcomes. Some empirical findings suggest that MTS identification plays the integral role in affecting MTS functioning (e.g., Cuijpers et al., 2016) and in some ways even team functioning (e.g., Mell et al., 2020). Yet, others have found the opposite—that team identification is central to promoting MTS performance (Porck et al., 2019).

What we know about identity in MTSs, however, may not perfectly inform the context of MTSs pursuing creative goals. Most MTS studies have analyzed settings where end goals require "coordination and memory-based reasoning under time pressure" (Firth et al., 2015, p. 819) command and control firefighting (Cuijpers et al., 2016), air combat (DeChurch & Mathieu, 2009; Firth et al., 2015), response to a disaster (Luciano et al., 2021; Waring et al., 2018). In all of these contexts, although the requirements to meet system goals may be unknown (Luciano et al., 2018), the end goals themselves are perfectly defined.

A salient trait of creative contexts, on the contrary, is that end goals themselves are under-defined at the outset (Lenfle & Loch, 2010). This "open-endedness" of the task requires the group to generate and explore a high number of options (Sommer et al., 2020), as well as consistently reconsider the goals and preferred actions according to this exploration instead of relying on established coordination routines (Sommer et al., 2009). These features of MTSs pursuing a creative goal entail an ambivalent relation to identification. Strong collective identification favors an unconditional assimilation of group values, beliefs, and norms. This may facilitate effective team processes and motivate the novel integration of disparate ideas from members (Im et al., 2013; Salazar et al., 2017), yet, the exploration of many creative ideas (Sommer et al., 2020) often emerges from an ability to *deviate* from homogeneous values, beliefs, and norms (Adarves-Yorno et al., 2007). This dynamic is well suited to the MTS structure in which members balance identification at two levels. Component teams provide a distinctive identity and purpose, but the overarching goal of the MTS unifies the members. The interplay of identification with the team and MTS may therefore play a critical role in creativity by balancing the assimilation and distinctiveness needed to engage in creative processes.

Our first objective is to identify what drives both team and MTS identification in the context of MTSs pursuing creative goals. We focus on within-team *and* between-team communication in MTSs as influencing *both* team and MTS identification. Communication among members helps to distinguish who is within a group's boundary and who is not, thereby giving rise to group identification (Riketta & van Dick, 2005; van Knippenberg & van Schie, 2000; Yan & Louis, 1999). We advance that where communication takes place (within or across teams) should matter for the development of team and MTS identification (Ziegert et al., 2020). Our second objective is to study how MTS and team identification interact to influence creativity outcomes of MTSs. We rely on prior work relating identity to creativity (Haslam et al., 2003; Mitchell & Boyle, 2015; Steffens et al., 2016) to analyze the role of team and MTS identification in pursuing creative goals.

Communication and Social Identification: Linear Effects

Communication is an essential social and informational conduit through which team members collaborate and cultivate social norms (Festinger & Thibaut, 1951; Poole, 1999). Communication patterns also give rise to social identification processes (Jans et al., 2015; Postmes et al., 2005; Scott et al., 1998; Yan & Louis, 1999). The Interactive Model (Postmes et al., 2005) describes a process of identity formation through induction—a bottom-up construction of social identity via the interactions of the members rather than a top-down inference of social identity via the context (Kozlowski & Klein, 2000). This model proposes that discussion between teammates enhances consensus around what being a

part of the group means, including the group stereotype, normative behaviors, and shared experiences. This consensus defines the team's perspective on the collective identity and represents a shared perception of reality that deepens connection to the team (Haslam et al., 2003; Postmes et al., 2005). Particularly in ad hoc groups with little history or context, communication "enables members of the group to translate an abstract idea of 'being in this together' into a concrete idea of what it is that 'we' are doing and striving for" (Postmes et al., 2005, p. 10).

Members that communicate frequently within the team are likely to engender identification from the bottom-up (Jans et al., 2015; Postmes et al., 2005). When teams develop tightly connected communication networks, they create a closeness that makes them likely to share in the characteristics, goals, and norms associated with the group (Coleman, 1988; Oh et al., 2004). These strong ties are the conduits for the inductive process of social identification. The frequent communication fuels collective identity construction (Jans et al., 2015) and connection to team goals, positive team characteristics, and the like (Connaughton et al., 2012; Lord et al., 1999). A team's network of communication serves to direct attention to the in-group and its qualities, which "brings up the boundary" around the team (Yan & Louis, 1999; Zerubavel, 1996).

Hypothesis 1: Within-team communication is positively related to team identification.

In MTSs, teams need to communicate internally as well as across team boundaries (Ancona & Caldwell, 1992). A major challenge of collaboration in an MTS involves integrating ideas and inputs across teams. Theories point toward the contact between disparate groups as the key to the development of a unified identity that can aid in effective intergroup relations (Gaertner et al., 2000; Pettigrew, 1998). Interactions with other groups cause a shift from an "us/them" mentality to an inclusive "we" mentality (Gaertner et al., 2000). Cooperative intergroup communication (Brewer & Miller, 1984) in an interdependent context changes the cognitive representation of the disparate component teams into a perception of the MTS as a unified whole (Gaertner et al., 2000). Through between-team communication, membership in the larger system along with the characteristics, goals, and norms of the MTS all become increasingly salient, and this in turn builds members' MTS identification (Lord et al., 1999; Oakes, 1987; Yan & Louis, 1999). Therefore, the amount of between-team communication a component team engages in ought to enhance the prominence of the MTS and predict the strength of the team's identification with the MTS.

Hypothesis 2: Between-team communication is positively related to MTS identification.

Communication and Social Identification: Curvilinear Effects

Whereas a team's within- and between-team communication contribute positively to members' identification with the team and MTS, respectively, communication at one level can detract from identification at the other level. For example, in multi-organization strategic alliances, tightly knit interactions within teams from one organization reinforce team identification, but may do so at the cost of identification with the alliance (Luvison & Marks, 2013). The implication of these multilevel effects is that teams can be caught in the crosscurrents as they balance dual identifications.

Team members exhibit a natural tendency to engage in social comparisons to establish similarities within the group as well as differences between groups (Hogg & Terry, 2000). Teams in the MTS can serve as a focal comparison point for team members because these teams are operating within a similar context. As representatives of their team (Ancona & Caldwell, 1992), those engaged in between-team communication should have a heightened sense of team identification when engaged in cross-team interactions (Tajfel, 1982). Communication outside the team thus prompts members to look at what makes their team distinctive from other teams in the system (Hogg & Terry, 2000). Bartel (2001) found this effect in organizations, where interactions with the external community, which emphasized intergroup differences, positively influenced organizational identification. Thus, a moderate amount of between-team communication does not impede and can actually promote team identification.

However, beyond a certain point, higher levels of between-team communication undermine the unique identity of the team by blurring its

boundary (Choi, 2002; Keller, 2001). Research on boundary spanning suggests that being a boundary spanner comes with the potential consequence of being too far removed from the team, which may hinder the development of team identification (Keller, 2001). Similarly, we argue that as communication across teams becomes denser (i.e., there are many boundary spanners), teams become too assimilated into the larger system, removing the basis for distinguishing one team from the rest and supporting a common group identification (Gaertner et al., 2000), to which the team is subsumed. Thus, we posit:

> *Hypothesis 3:* Between-team communication has an inverted U-shaped relationship with team identification—such that team identification is highest for teams with moderate levels of between-team communication.

Within-team communication ties facilitate team process and also affect how the team bonds with the system. The MTS is the higher order entity that is inclusive of the lower order team entities. As such, the MTS performance context determines the hierarchy of goals, the power differential across teams, and the collaboration structures (Mathieu et al., 2001). The teams in an MTS pursue their own team-level goals, but do so in the service of achieving a superordinate MTS goal down the line, meaning that internal team communication in the MTS context encourages members to see their team contributions through the lens of the MTS goals. This suggests that communication within the team can also, in part, make MTS membership salient. For example, Russo (1998) found that because an interaction with someone in the department is also an interaction with someone in the organization, the foci of identification are blurred in interactions with subordinates, coworkers, and clients. Research also demonstrates that nested identities are linked, with correlations between nested identities ranging from .41 to .68 (e.g., Becker, 1992; van Knippenberg & van Schie, 2000).

However, when within-team communication is dense, there is a tendency to see the team as an end in itself and not as a team embedded in a larger system. Within-team communication may boost the affective bonds in the team by enhancing team identification, but excessive amounts may also create strong in-group biases that block out associations with the out-group (Gaertner et al., 2000), thereby hindering identification with the MTS. Oh et al. (2004) found that this dynamic predicts team effectiveness: a high level of connections among teammates created an impenetrable boundary around the team that blocked access to social capital residing in relationships outside of the team. Similarly, the in-group biases that come with strong team identification may impede positive intergroup relations (Richter et al., 2006). When closure is too high, the team becomes the primary focus, leaving the members unable to distinguish the MTS as an interdependent system of teams sharing a superordinate entity. Therefore, we posit:

> *Hypothesis 4:* Within-team communication has an inverted U-shaped relationship with MTS identification—such that MTS identification is highest for teams with moderate levels of within-team communication.

Effects of Team and MTS Identification on MTS Innovation

Creativity is the intersection of novel ideas and the usefulness of those ideas in practice (Amabile, 1983; Miron-Spektor & Beenen, 2015). The extant literature on team creativity suggests that functional heterogeneity among members is an important promoter of innovation (Drach-Zahavy & Somech, 2001). Members with different roles and expertise combine to produce novel and useful innovations (Hülsheger et al., 2009). Ideally in an MTS, component teams that focus on different aspects of the MTS goal integrate to develop something more novel and useful than any one team can do alone. Zaccaro et al. (2017) describe creative processes between teams that are similar to those that occur within teams including those that define the problem and solution (e.g., problem definition, information gathering, idea generation, and evaluation) and processes related to putting the solutions in action (e.g., solution implementation and monitoring). However, the hallmark of between-team creative processes is the integration of ideas and coordination of action across team domains. The MTS must take ideas that are framed from the perspective of individualized functions and integrate them for a holistic solution. Herein lies the effectiveness of Apple's approach to teamwork—Podolny and Hansen (2020) describe the creation of Apple's dual-lens camera with portrait mode

requiring the collaboration of around 40 specialist teams. However, because no single team can create the final solution on its own, their integration through collaborative debate is essential. A disconnect between teams can hinder this critical integration of ideas. As such, identification may play an important role in creativity (Salazar et al., 2017). However, identification with the team or MTS in isolation may not promote a successful system.

When individuals are defined by their group membership, they are more likely to act in the group's best interest (Riketta & van Dick, 2005) and exert effort toward collective goals (van Knippenberg & van Schie, 2000). Teams that strongly identify with the MTS may find it easier to integrate ideas across teams, as their identification with the superordinate group would promote acceptance of ideas from others outside of the team and motivate the translation of distinct ideas across teams in novel and meaningful ways (Haslam et al., 2003; Im et al., 2013; Salazar et al., 2017; Steffens et al., 2016). However, MTS creativity is a multilevel process, and while integration across teams may be a critical component, teams must also work at idea generation and integration *within teams*.

The MTS structure, wherein component teams pursue functionally distinct goals, is especially designed to promote the distinctiveness of those component teams. Creative contributions from a component team should therefore be unique, expressing the individuality of the team (Smith & Berg, 1987). If the team's unique identity plays a critical role in the cultivation of unique ideas (Haslam et al., 2003; Mitchell & Boyle, 2015), dual identification processes are then closely tied to the process of creativity. As members work toward consensus around who/what the team is, they look for similarities among themselves and also establish their distinctiveness from other teams in the MTS. Members might accentuate the role and expertise of the team in order to distinguish their identity within the MTS (Haslam et al., 2003). Team identification then provides a basis for how the team develops ideas and cultivates a closeness among members that promotes integration within teams. Therefore, teams that only have strong identification with the MTS have an imbalance that pushes the MTS toward homogeneity of thought and neglects critical team contributions to MTS creativity. However, team identification by itself (in the context of MTS creative work) is also a hindrance to MTS creativity. In the absence of a unified identity, high intergroup differentiation can push the team toward the perils of groupthink by enhancing the subgroup and weakening bonds outside of the team that facilitate integration of ideas across component teams (Gaertner et al., 2000; Haslam et al., 2003; Richter et al., 2006).

Team and MTS identification are *together* important in MTS creativity. In MTSs, team identification gives teams uniqueness and autonomy from the other component teams through distinctiveness, but MTS identification unifies them through assimilation (Brewer, 1991). Haslam et al. (2003) Actualizing Social and Personal Identity Resources (ASPIRe) model supports this general notion. The ASPIRe model advances that individuals actualize social and personal identity resources (i.e., ASPIRe) to promote positive organizational outcomes, such as creativity. A portion of the model describes the process of Sub-Casing in which members engage in "subgroup caucusing" to establish goals, identify barriers to goals, and establish an identity related to the achievement of their goals which is internalized and carried forward in taskwork. However, this process should take place within the context of a shared superordinate identity (e.g., organization, MTS), without which teams can become isolated and subject to groupthink. In a similar process of Super-Casing, subgroups come together to integrate and establish shared goals, barriers, and identity at a superordinate level. However, important in this process is to "define the superordinate group in a way that allows for, and incorporates, subgroup difference" (Haslam et al., 2003, p. 94). MTS members therefore develop a complex identity comprising both team and MTS memberships and with that, a creative tension between the needs of groups at each level, that members are motivated to integrate and reconcile through creative problem solving (Haslam et al., 2003). Taken together, we advance that the balance of team and MTS identification is important for MTS creativity, whereas one without the other can compromise efforts. Overarching MTS identification alone can lead to the dismissal of important aspects of the team (i.e., aspects that make up their distinct identity), whereas subgroup/team identification alone may lead to insulated teams with competing objectives that hinder cross-team integration and idea generation (Haslam et al., 2003).

Hypothesis 5: Team identification moderates the relationship between MTS identification and MTS creativity, such that the influence of MTS identification on MTS creativity will be positive at higher levels of team identification and diminished at lower levels of team identification.

Method

Participants and Procedure

Participants were part of a unique international, interorganizational, and interdisciplinary sample consisting of 334 individuals working in 1 of 128 project teams embedded in 32 MTSs. Participants took part in an 8-week social entrepreneurship project linking four distinct courses across three educational institutions ($M_{age} = 21$; 53% females). These MTSs were therefore "external MTSs," in that component teams were linked across different organizations (Zaccaro et al., 2012). Each MTS was composed of four component teams. Students enrolled in Environmental Ecology were randomly assigned to an "Ecology team." At the same U.S. university, students taking a course in Social Psychology on leadership and small group behavior were randomly assigned to an "Admin team." Students, at a second U.S. university, taking a Social Psychology course focused on behavior change and influence were randomly assigned to a "Behavior Change team." Finally, students in Innovation Management at an international university in France were assigned to an "Innovation Management team." Each component team from a course was then randomly assigned to an MTS (i.e., linked to three other teams from three other classes). MTS size ranged from 8 to 12 individuals, with a modal MTS size of 11 individuals. Due to differences in class sizes, teams consisted of two, three, or four members.

Teams shared a superordinate goal with the other teams, but each also had to work on a discipline-specific component of the project. Their final course grade depended on both goals (component and superordinate). The MTS goal was to leverage technology to improve environmental sustainability in an urban city by changing people's behavior. Students had to collectively choose an environmental sustainability challenge, technology application, and a city with a population of 3–5 million (large enough to require dramatic shifts in people's environmentally friendly behavior in order for sustainable growth to continue). MTSs tackled sustainability challenges such as air and water pollution, energy generation, waste disposal, and auto emissions, in cities ranging from Chennai to Berlin to Los Angeles. The final MTS deliverable was an integrated website to describe the details and promote their idea to a fictional foundation.

Component teams each had domain-specific tasks. The Ecology teams had to identify the specific facets of the ecological challenge within the city, Behavior Change teams to develop an attitude and behavior change plan. Innovation Management teams identified a technology and a plan to insert it into the business ecosystem. Admin teams managed deadlines, facilitated meeting schedules, and completed a plan for how the MTS might evaluate their proposed idea in the field. The component team goals were tied to specific deliverables evaluated strictly on domain-specific criteria. For instance, the innovation management team was assessed based on its ability to provide an accurate overview of the advancement of the technology they had selected and the feasibility of its supply and implementation in the chosen city.

The final website required the teams to align their work for a clearly integrated idea. Together, the teams iterated on ideas and addressed how their proposal was the optimal solution for the challenges within the city. To successfully complete this project, students needed to work with the members of their component team on their disciplinary portion of the project, but they also had to align their work with other MTS component teams to create a successful proposal.[1]

[1] Throughout the project, we had consistent communication with the professors of the courses, check-ins with the teams through journal entries, and our own logs of happenings throughout. These communications suggest that the teams did put effort toward meaningful integration and had conflicting ideas on their general process for the project or their domain-specific contributions. For example, some comments from Ecology and Behavior Change teams indicated that their ideas were being challenged by the other teams making it difficult to provide input, and Innovation Management teams discussed difficulties in decision making with the other teams. Additionally, though we do not have the content of MTS meetings, we do have a record of their occurrence when they happened through one of the technologies provided. There were 153 total meetings on WebEx with an average of six attendants per meeting. This information suggests that meaningful integration of component team inputs was a central, and at times, challenging piece of the MTS deliverable.

The project lasted a total of 8 weeks. There were two required meetings for every MTS early in the project. Each MTS met virtually during the first week of the project to choose a world city to focus on, and an environmental problem created by urban living in this city. In a second required meeting for the MTS, the teams collaborated on a team charter to help guide them through within-team and between-team interactions throughout the project (see Asencio et al., 2012 for description of the multiteam charter). Given the complex nature of the project, these initial meetings were necessary to trigger initial connection across teams and kick-off the project. However, apart from the two initial meetings and due dates for major project milestones, we did not impose a work structure for the MTSs. It was important for the observation of identification that every MTS self-organized and adopted their own process. Participants chose how and when to communicate in the completion of their deliverables and developed their own sequence for completing component team and MTS level work. The only requirement was that deliverables be completed by their due date. The MTSs could continuously iterate on their work through interteam coordination and discuss each important step collectively. However, they were also at liberty to adopt a more sequential approach, taking more time for work at the team level independently of other teams and combining their inputs as an MTS only after substantial work was done at the component level. It was also possible for participants to minimize between-team collaboration and design a final website that was a mere collection of component pieces. However, this approach would likely result in incoherent outcome (e.g., a well-described and relevant environmental problem being attached to a well-designed behavior change plan targeting a behavior that has only a loose impact on the problem).

To provide equal opportunities for collaboration, we provided each MTSs with a suite of tools that would be used by real-world distributed teams. These included WebEx video conferencing, Basecamp project management software, and Google Groups. MTSs also had the freedom to choose their own method of communication. MTSs were free to determine which tools to use, how often, and for what purpose.

Measures

Communication networks were measured via sociometric surveys at Week 4 to allow MTSs sufficient time to establish communication patterns and to experience the planning and action subphases required to complete the first deliverable which was the foundation for the project. The network prompt was: "While you and your team were working to complete Goal 1, whom did you communicate with frequently?" Respondents selected names from a roster with the names of all members of their MTS (Kenny & La Voie, 1984). The communication network for each MTS was partitioned into within-team and between-team communication.

Within-team communication was operationalized as the density of communication ties among the members of the component team, consistent with earlier work (McLaren & Spink, 2020). For example, the focal teams in Figure 1 shows a three-person focal team, in which there are $3 \times 2 = 6$ possible directed communication ties. Density is a ratio of the observed divided by the total number of possible ties (Wasserman & Faust, 1994). The focal component team in the figure has three internal ties, of which the density is (3/6) or .50. Within-team communication density scores in the current sample of teams ranged from 0 to 1 ($M = .81$, $SD = .27$).

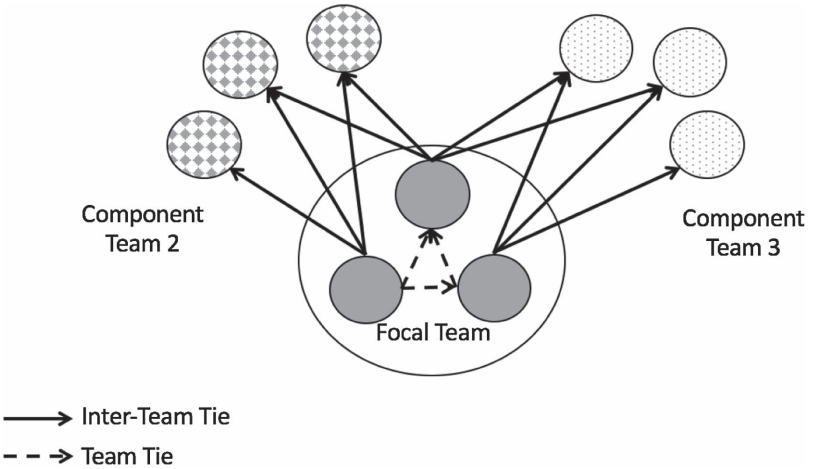
Between-team communication was operationalized as the density of outgoing communication ties between the members of different component teams. Between-team communication density for the *i*th team in *j*th MTS is calculated by the following formula:

$$\frac{L_i}{(m_i \times n_j) - (m_i \times m_i)}.$$

Where m_i is the number of members on the *i*th team, n_j is the number of members on the *j*th MTS, and L_i is the observed number of external ties for the *i*th team.

Between-team communication density then is the number of observed outgoing ties (L_i) between the *i*th team and the members of all other component teams divided by the total possible number of external ties $(m_i \times n_j) - (m_i \times m_i)$. Figure 1 is useful for understanding how these scores were calculated. Figure 1 illustrates a three-person team within a nine-person MTS. There are a total of $[(3 \times 9) - (3 \times 3)]$ or 18 possible between-team

Figure 1
Hypothetical Model of an MTS Illustrating Within-Team and Between-Team Communication



Note. MTS = multiteam systems.

communication ties. In this example, the focal component team has 10 observed between-team communication ties to the members of the other component teams; these are represented by solid arrows. The density of between-team communication is (10/18) or .56. Between-team communication density scores in the current sample of teams ranged from 0 to 1 (M = .15, SD = .20). The average density of within-team communication was 81% and 15% for between-team communication.

Team identification[2] was assessed with a pictorial measure adapted from Hinds and Mortensen (2005), administered at Week 4. This type of pictorial measure has been commonly used and validated in the identification literature (e.g., Swann et al., 2009; Tropp & Wright, 2001). Participants were shown six diagrams, each with two circles labeled "self" and "team." The question stem read: "Select the picture that best describes your relationship with your team." The six diagrams ranged from 1 = *very distant*, where the self and team had no overlap, to 6 = *very close*, depicting completely overlapping circles. Individual responses were aggregated to the team level; intraclass correlation coefficient, ICC(1) = .25, ICC(2) = .46, $r_{wg(median)}$ = .72.

MTS identification was assessed using the same measure adapted to capture the relationship between "self" and "task force" (i.e., MTS). MTS identification was also measured at Week 4 of the project. The graphical representations were provided along with the prompt: "Select the picture that best describes your relationship with your task force." Individual responses were aggregated to the team level, ICC(1) = .22, ICC(2) = .43, $r_{wg(median)}$ = .72.

MTS creativity was assessed at the conclusion of the study. The MTS goal was to improve environmental sustainability through attitude and behavior change brought about by the application of a new technology. Each MTS articulated their proposal via a website. These proposals were considered creativity to the extent that the ideas presented were both novel (i.e., new and creative) and useful (i.e., can be utilized to create change). Novelty and usefulness have often been considered two key dimensions of creativity (Amabile, 1983; Miron-Spektor & Beenen, 2015; Salazar et al., 2017). Accordingly, we adopt this framework in our operationalization of creativity in this context.

In order to assess the creativeness of MTS ideas for solving an environmental problem, we enlisted

[2] Research on team identity has found that within-group agreement on identification is related to the amount of within-team communication (Jans et al., 2015). As such, we additionally explored whether the r_{wg} values for each team are impacted by within communication and found no significant relationship between these variables (team identification: r = .03, p = .74; MTS identification: r = .10, p = .29). This suggests that in this sample, members could agree on their level of identification whether communication was high or low.

14 Subject Matter Experts (SMEs). SMEs were all upper-level undergraduate students taking a course in social entrepreneurship in the business school of a Southeastern University. The 14 SMEs were divided into two panels which were convened on separate days. Across all SMEs, ages ranged from 19 to 22 years, 57% of SMEs were men, 36% were White, and 43% were business majors. Social entrepreneurship centers upon the application of entrepreneurship principles to the betterment of important social problems (Mair & Marti, 2006). These experts were thus deemed appropriate to provide ratings of creativity relevant to the MTS goal. The panels discussed each of the proposals from the integrated websites created by each MTS and came to consensus on ratings on both novelty and usefulness. For a final measure of MTS creativity, we created a multiplicative term of novelty and usefulness (Magnusson, 2009).

A proposal was considered novel to the extent that the proposed ideas were new as opposed to conservative. The panels used a single prompt to guide their discussion: "How novel are the ideas for change that are included in this proposal?" The anchors ranged from 1 = *ideas are very conservative* to 5 = *ideas are very novel*. Indices of inter-rater agreement/reliability for novelty, ICC(3) = .35, ICC(3k) = .52, $r_{wg(median)}$ = .75, supported the aggregation of ratings across Panels 1 and 2.

A proposal was considered useful to the extent that it was successful in the defining principles of a social entrepreneurship project: its social impact, its financial sustainability, and minimization of its unintended impact (Boschee, 1998; Mair & Marti, 2006). The prompt used to guide this discussion was "Does this proposal incorporate entrepreneurial principles to be used to achieve the desired social change?" The anchors ranged from 1 = *Proposal does not incorporate entrepreneurial principles* to 4 = *Proposal incorporates entrepreneurial principles in planning for the desired social change, and these principles are clearly defined and appropriately applied*. This conceptualization of usefulness captures the extent to which ideas were relevant and workable within the specific problem domain (i.e., applied the principles of social entrepreneurship) and were thorough (i.e., clearly defined; Dean et al., 2006). Indices of inter-rater agreement/reliability for social entrepreneurship, ICC(3) = .65, ICC(3k) = .79, $r_{wg(median)}$ = .60, supported the aggregation of ratings across the two panels.

Covariates included geographic location, team size, team boundary size, and MTS size. We controlled for geographic location to account for a number of potentially important differences due to time zone separation, culture, nationality, and ethnicity between the teams in the U.S. and France. We controlled for team size and the size of MTS boundaries—the total possible connections with those in other teams. Team size and team boundary size are important controls given that it may be easier or harder to have a highly dense communication network depending on the size of the team and how many members there are on other component teams in the MTS. Finally, we account for differences owed to MTS size in our analyses for Hypothesis 5.

Results

Table 1 summarizes the correlations, means, and standard deviations for all key study variables. Examining the correlations among study variables shows that teams adequately distinguish between team and MTS constructs. The density of within-team and between-team communication ties was not correlated ($r = -.03, p = .723$). Team and MTS identification were moderately correlated ($r = .32, p < .001$). Consistent with previous research (cf., Becker, 1992; van Knippenberg & van Schie, 2000), this correlation suggests these nested identities are related to one another. However, this correlation also supports the idea that team identification is distinct from MTS identification. Given that measures of the same construct with different foci may be inflated due to common method variance (Podsakoff et al., 2003), the moderate correlations suggest team members adequately discriminated in their reports of team versus between-team communication, and team versus MTS identification.

To test the hypotheses, we conducted a multilevel path analysis[3] using the Lavaan package in R (Rosseel, 2012). Level 1 includes tests for

[3] As an alternative approach, we tested H1–H4 using three-level models in which Level 1 included individual identification with the team and MTS, Level 2 included team-level communication, and Level 3 included MTS membership. H5 was tested with an ordinary least squares (OLS) model in which all variables were aggregated to the MTS level. Conclusions remain unchanged with these alternative models.

Table 1
Means, Standard Deviations, and Bivariate Correlations of Study Variables

Team-level variables	*M*	*SD*	1	2	3	4	5	6	7	8
1. Geographic location	.25	.43	—							
2. Team size	2.67	.50	−.31***	—						
3. Team boundary size	21.31	4.05	−.19*	.88***	—					
4. Within-team communication	.81	.27	.22*	−.21*	−.16	—				
5. Within-team communication squared	.07	.13	−.06	−.05	−.01	−.80***	—			
6. Between-team communication	.15	.20	−.11	−.11	−.11	−.03	.04	—		
7. Between-team communication squared	.04	.09	−.12	−.14	−.15	.06	−.02	.80***	—	
8. Team identification	4.25	1.00	.12	−.07	−.03	.42***	−.34***	−.04	−.11	—
9. MTS identification	3.21	.95	−.18*	−.14	−.12	−.03	.08	.46***	.31***	.32***

MTS-level variables	*M*	*SD*	1	2	3	4
1. MTS size	10.43	.90	—			
2. Team identification	4.25	.46	.06	—		
3. MTS identification	3.21	.52	−.14	.60***	—	
4. MTS creativity	7.43	4.14	−.01	−.24	.00	—

Note. $N = 128$ teams, 32 MTSs. MTS = multiteam systems.
† $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$.

Hypotheses 1–4, which are conceptualized at the team level, whereas Level 2 includes tests for Hypothesis 5, which is conceptualized at the MTS level. Figure 2 depicts the fitted model, standardized regression coefficients for each relationship, and R^2 values. Inspection of goodness of fit indices suggests good model fit (Hu & Bentler, 1999): $\chi^2(13) = 13.08$, $p = .442$, comparative fit index (CFI) = 1.00, root-mean-square error of approximation (RMSEA) = .007, standardized root-mean-square residual, SRMR(within) = .052, and SRMR(between) = .077. Overall, the model explains 23% of the variance in team identification, 24% of the variance in MTS identification, and 27% of the variance in MTS creativity.

Control Variables

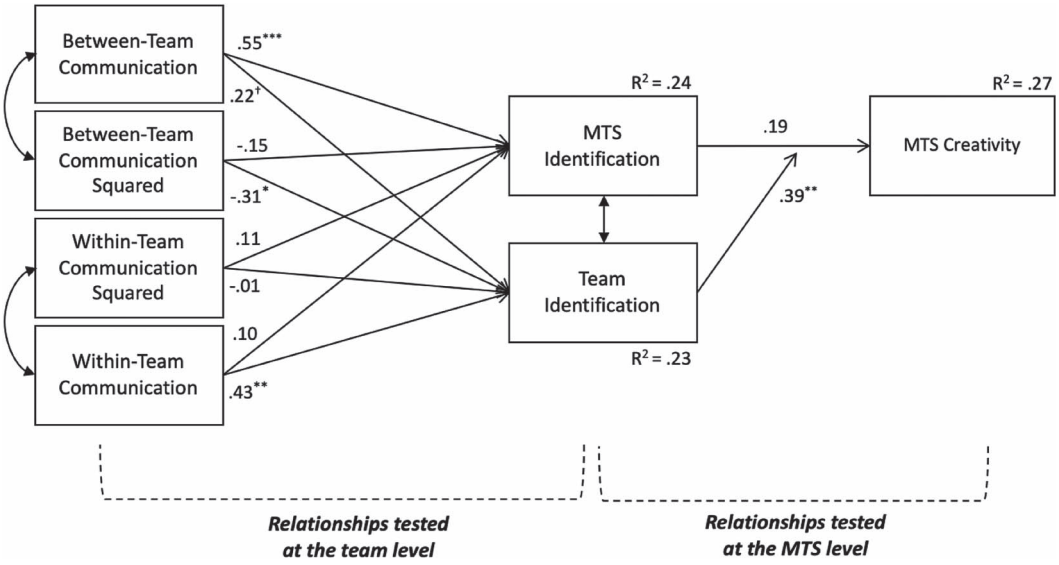
There was one notable relationship between the control variables and the focal outcomes. Geographic location is significantly related to MTS identification ($\beta = -.21$, $p = .014$), suggesting that the component teams located in France had stronger MTS identification. All other variables are unrelated to any of the outcomes. As a check, we ran analyses with MTS size (instead of boundary size) and team types (i.e., Ecology, Behavior Change, Innovation Management, and Admin). The choice of controls does not affect the conclusions.

Linear Effects

Both Hypotheses 1 and 2 were tested using a linear effect. The left portion of Figure 2 displays the results of analyses for Hypotheses 1–4. In support of Hypothesis 1, within-team communication is positively related to team identification ($\beta = .43$, $p = .003$). In support of Hypothesis 2, between-team communication is positively related to MTS identification ($\beta = .55$, $p < .001$).

Figure 2

Results of a Multilevel Path Analysis Assessing the Impact of Communication on Team and MTS Identification (Level 1) and Team and MTS Identification on MTS Creativity (Level 2)



Note. At Level 2, team and MTS identification represent the averages across the four teams in the MTS. Only exogenous variables were correlated at each level. Control variables are not shown. Control variables include geographic location, team size, and boundary size at Level 1, and MTS size at Level 2. With the exception of the relationship between geographic location and MTS identification ($\beta = -.21$, $p = .014$), all control variables were unrelated to the focal outcomes. Goodness of fit indices: $\chi^2 = 13.08$, $p = .442$, CFI = 1.00, RMSEA = .007, SRMR(within) = .052, SRMR(between) = .077. MTS = multiteam systems; CFI = comparative fit index; RMSEA = root-mean-square error of approximation; SRMR = standardized root-mean-square residual.

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

Curvilinear Effects

In order to test for the curvilinear effects hypothesized in Hypotheses 3 and 4, the target model included a quadratic term for the focal independent variable: within-team or between-team communication (Cohen et al., 2003). We find that the quadratic term for between-team communication density is negatively and significantly related to team identification ($\beta = -.31, p = .014$), while controlling for the linear effect of between-team communication ($\beta = .22, p = .079$), lending support to Hypothesis 3. The same procedure was used to test Hypothesis 4. Contrary to Hypothesis 4, findings indicate that the quadratic term for within-team communication was not related MTS identification ($\beta = .11$, $p = .444$) nor was the linear term for within-team communication related to MTS identification ($\beta = .10$, $p = .516$).

Effect of Team and MTS Identification on MTS Innovation

Hypothesis 5 was tested at the MTS level (Level 2), by averaging the four component team scores of team and MTS identification to the MTS level. Results are shown on the right portion of Figure 2. The effect of the interaction between team and MTS identification on MTS creativity is significant ($\beta = .39$, $p = .006$), after accounting for the main effects of MTS identification ($\beta = .19, p = .325$) and team identification ($\beta = -.43, p = .02$). This finding suggests that the relationship between MTS identification and MTS creativity is conditional on the level of team identification. Figure 3 illustrates this interaction pattern at ±1*SD* for team identification. To further probe this interaction, we used a technique to investigate the regions of significance for the moderator (Bauer & Curran, 2005; Preacher et al., 2010). This technique defines the levels of the moderator at which the focal variable is significantly related to the outcome, and as such, provides more precise information than the common approach of choosing the high/low points of the moderator (typically ±1*SD*) to test simple slopes. This analysis indicates that when team identification is lower than −2.64 or higher than .31*SD*s from the mean, the slope for the relationship between MTS creativity and MTS identification is nonzero.

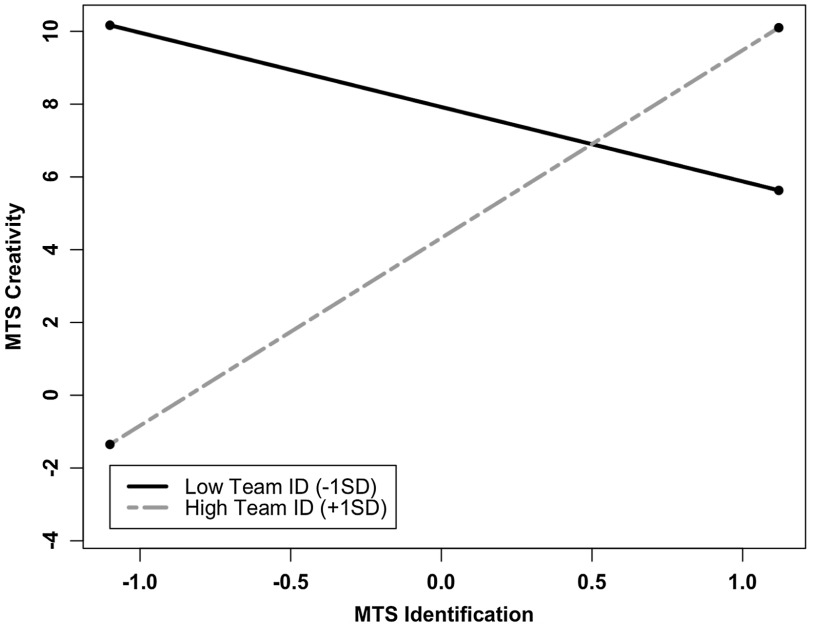
Discussion

As teams work within and across team boundaries to innovate, understanding how to foster attachment both within and across teams is essential (Connaughton et al., 2012; Richter et al., 2006). This study finds evidence that between-team communication is positively related to MTS identification yet has a complex relationship with team identification. We also conclude that both MTS and team identification relate to MTS creativity. The current work makes several contributions to the literature.

First, our findings shed new light on the countervailing forces (DeChurch & Zaccaro, 2013) at play in MTSs. Conceptually, the notion of countervailing forces suggests that teams and systems cannot be designed and nurtured in isolation. Instead, the development of relationships that connect component teams affects how the team develops internally. The notion of countervailing forces is also within the ASPIRe model, which explicitly argues that subgroup caucusing should not occur outside the context of an organizational identity, and that the ultimate integration of subgroups should lead to "a situation in which employees define themselves in terms of a relatively complex superordinate identity (as members of the focal organizational unit) but are simultaneously aware of the subgroup memberships from which that identity has been forged" (p. 95). While the notion of countervailing forces has been alluded to (Connaughton et al., 2012; Davison et al., 2012; Lanaj et al., 2013; Ziegert et al., 2020), it has not yet been explicitly tested, leaving a gap in our understanding of the functioning of teams within MTSs (DeChurch & Zaccaro, 2013; Luciano et al., 2018). To advance our understanding of the forces that facilitate and/or hinder team *and* MTS effectiveness, we therefore predicted divergent consequences of communication on identification across levels.

Our findings support a portion of our predictions—there is a countervailance effect of between-team communication. When many team members are exposed to a variety of different ideas and inputs coming in from other teams, it weakens the internal coherence and uniqueness of the team as an entitative unit. This finding is in alignment with recent research on the balance of within-team and between-team interactions in MTSs, which finds that a preference for between-team interactions over within-team interactions promotes team

Figure 3
Interactive Effect Between Team and MTS Identification on MTS Creativity



Note. MTS = multiteam systems.

conflict that detracts from team performance (Ziegert et al., 2020). An interesting question for future research is the ideal configuration of between-team communication. Perhaps having certain individuals enact the boundary spanning role allows the team to benefit from novel perspectives, without undermining the internal coherence of the team. Unexpectedly, these findings suggest that within-team communication networks are unrelated to identification with the MTS. One possible reason for this non-finding may be that the team and MTS goals in the present study were not in high competition, meaning that within-team communication networks likely contributed to members' dual identification. Future research should look to different types of MTS goal hierarchies to further assess this relationship.

Second, we empirically test the idea that the emergence of social identification can result from the bottom-up influence of interpersonal interaction among members of a group (Postmes et al., 2005; Scott et al., 1998) and additionally demonstrate the potential of studying intra and intergroup network ties to understand group identity (Graupensperger et al., 2020; Wölfer et al., 2015). In support of the interactive perspective, we find that within-team communication density relates to team identification and between-team communication density predicts a team's identification with the MTS.

A third contribution of this work is that it links team and MTS identification to MTS creativity. As predicted, the effect of MTS identification on MTS creativity is dependent on team identification. Without strong team identification, creativity suffers as MTS identification grows. Thus, fostering identification with the MTS and not the team (or vice versa) is not recommended. This recommendation is in line with those from research on multilevel identification, such as the ASPIRe model (Haslam et al., 2003), and some prior work dual identification (e.g., Richter et al., 2006). However, our analysis also yielded an unexpected finding—at really low levels of team and MTS identification, MTSs were also highly creative. This finding may be the result of the complexity of multiple identities and the creative process that were not measured in the present study.

The notion that low team and MTS identification is associated with creative performance comparable with high team and MTS identification

seems counterintuitive, but this finding fits well within the logic that the balance of identification across levels is important for MTS creativity (Ziegert et al., 2020). We advance that there is balance in identification when both team and MTS identification are high and when they are both low. In line with our prior logic and findings, the balance of team and MTS identification at higher levels allows members to develop their unique perspectives within the team while remaining in tune with the perspectives and ideas across the MTS, and vice versa, allows members to discuss ideas across teams, but maintain a grounding in their team's unique function. Identification with two groups (team and MTS) promotes a level of distinctiveness that helps avoid homogeneity or pressures toward groupthink that come when identifying with one group in isolation (Haslam et al., 2003, 2013). This argument is comparable with non-MTS research which finds that multiple identities (not just one) benefit creativity, such as studies of game developers that identify with their firm and external communities of practice (Cohendet & Simon, 2007), or bicultural people that equally endorse both of their cultural identities (Spiegler & Leyendecker, 2017). However, members may also avoid the pitfalls of identifying with one group by not identifying with either. When team and MTS identification are both low, members need not conform or assimilate to the norms of either group and are unbound by pressures toward groupthink or an apprehension of being negatively evaluated by others, both of which harm creativity (Amabile et al., 1990; Friedman et al., 2016; Shalley, 1995). Instead, members can explore ideas through their own idiosyncratic style that comes with their personal identification (Adarves-Yorno et al., 2006, 2007; Haslam et al., 2013), or alternatively, may nurture creativity by leaning into the diversity of members' various identities outside of the MTS.

A second consideration for this counterintuitive finding relates to the variety of groups' particular creative processes, an aspect that was not captured by our protocol. Although all MTSs in the study were guided by specific and identical milestones, there was no prototypical sequence of events for MTS work. Participants were relatively free in terms of how to articulate the steps of their creative process, which has been shown to have significant influence on outcomes (e.g., Seidel & Fixson, 2013). Given our conceptual framework, teams with both low team and MTS identification should be those with little communication in the first phase of the project. Thus, these teams are likely to have first relied on decentralized idea generation prior to moving to group meetings for selecting and elaborating on individual ideas. Creativity research has found that such reliance on "solitary ideation" yields original ideas (Girotra et al., 2010; Korde & Paulus, 2017; Sommer et al., 2020) and avoids distraction or production blocking (i.e., when reflection is slowed down by the need to listen to others' ideas; Girotra et al., 2010). MTSs that adopted this creative process would have demonstrated low team and MTS identification at the time of measurement. While we argued that aspects of the ASPIRe framework (i.e., Sub-Casing and Super-Casing, Haslam et al., 2003) were relevant for MTS functioning in the current setting, the length of time MTSs spent in these processes or the particular order in which they occurred remains unknown. Future research should account for the particular creative process adopted by self-managed MTSs or perhaps manipulate the creative process in order to further understand the impact of dual identification on creative outcomes.

It may also be possible that MTSs with low team and MTS identification had an increased influence of a few highly competent members. When groups are dysfunctional, such as when several members engage in social loafing, other members engage in "social compensation" (Williams & Karau, 1991) by increasing the efforts they put into reaching the group's goals (Liden et al., 2004). Such a positive effect on creative performance might be even stronger considering that the members who engage in such social compensation tend to be the ones with the highest levels of conscientiousness (Schippers, 2014). This paradox of dysfunctional groups might be even more visible in MTSs, where coordination at two distinct levels is particularly challenging: a select few key contributors, functioning as a "lightweight" leadership subgroup, might be an expedient way of coordinating the MTS (Davison et al., 2012) in the ambiguous task of creativity.

Future research could also further explore the complex relationship between identity and creativity by conceptualizing identity as multidimensional. Identification is described as comprising two dimensions: (a) self-definition, which involves self-categorization and self-stereotyping

as a group member and (b) self-investment, which involves one's satisfaction with group membership and having a sense of solidarity and commitment to the group (Leach et al., 2008). An extension of our research might include an investigation of how these two dimensions impact creative performance. For example, work by Jans et al. (2015) suggests that different forms of communication are differentially related to different dimensions of identity. They found that in a face-to-face context, both self-definition and self-investment are strengthened by interactions among members, but interactions have a stronger influence on self-investment. Conversely, in an online context (with solely asynchronous communication), only self-definition was influenced by communication. In our setting as well as many real-world settings with MTSs (e.g., new product development, multidisciplinary research), richer forms of interaction are more accessible within than across component teams. Thus, future research might test the idea that self-investment develops more rapidly at the team level vs the MTS level, and this self-investment motivates early integration of individual ideas and perspectives within teams. The dimensions of MTS-level identification, in contrast, may develop more slowly. The ASPIRe model describes early forms of superordinate identity (i.e., MTS identity) as mechanical—members hold a basic and uncomplex understanding group membership (Haslam et al., 2003). This idea of identification is not entirely unlike self-definition which involves simple recognition of group membership. New research might explore the notion that the mechanical superordinate identification within the ASPIRe model corresponds to early forms of self-definition. Further, that though not yet nuanced and representative of sub-group identities, this type of identification serves to signal a superordinate context under which sub-group identities are developed (Haslam et al., 2003), and that later interactions between teams help to build a more nuanced and integrative superordinate identity that may build self-investment with the MTS and promote creativity across teams (Haslam et al., 2003). Hypothetically, MTSs that push to develop greater MTS self-investment too early in the process may be those that demonstrate a countervailence effect of between-team communication on identification, similar to what we observed in the present study.

Finally, the context of the present study also represents a novel contribution. An overwhelming majority of the literature on MTSs has focused on collaboration among action teams such as those in military operations, humanitarian efforts, and emergency response (e.g., Cuijpers et al., 2016; Davison et al., 2012; DeChurch & Marks, 2006; De Vries et al., 2016; Firth et al., 2015; Lanaj et al., 2013; Marks et al., 2005; Murase et al., 2014; Porck et al., 2019). Additionally, the extant MTS literature has focused on internal MTSs—or those in which component teams are drawn from the same organization. Therefore, many of the theories and conclusions around MTS effectiveness have been almost exclusively predicated on a limited view of MTSs. The present study leverages a unique sample of students from three different universities and four different courses, working on a creative task.

Practical Implications

The results raise the issue of how to optimize team communication networks to maximize identification with both the team and system. Consideration of the results in the aggregate suggests the combination of within-team and between-team communication that achieves optimized levels of team and MTS identification differs from combinations aimed at achieving high levels of *either* team or MTS identification. The highest point for both team and MTS identification occurs when within-team communication is high, but between-team communication is moderate (i.e., 50%–60% density).[4]

Importantly, this insight for dual identification is designated for MTSs in particular versus similar organizational forms like global virtual teams or interdisciplinary teams. In an MTS, the component teams are functional and essential, and therefore, it is important to attend to both within-team and between-team processes (Marks et al., 2005). In contrast, in an interdisciplinary or

[4] We calculated predicted values of team and MTS identification at every coordinate of within-team and between-team communication. We averaged these sets of values to make a combined dual identification score and plotted the data to determine the combination of within- and between-team communication that yields the highest value of both identifications. Scores were averaged only when the difference between predicted team and MTS identification was a maximum absolute difference of 1.

virtual team, having subgroups is often dysfunctional, and thus these teams should strive for a single overarching identity that unifies the members (Hinds & Mortensen, 2005); the careful balance of internal and external communication networks need not apply. Therefore, a necessary step for leaders is to determine whether the collaboration they oversee consists of a single team or an MTS before applying insights from the present study.

Limitations

Our study has several notable strengths including empirical evidence to support better MTS design, a multilevel perspective, a virtual and cross-national sample, and a focus on MTS creativity. However, we would also like to note several limitations. One important consideration is that classroom teams are likely to exhibit important differences from workplace teams, some of which may alter the nature of these relationships. Thus, replication of these findings in a field setting is a recommended next step. However, despite the obvious differences in context and consequences for performance, using classroom teams is both laboratory- and field like (Davison et al., 2012). This setting is lab like by affording some control and comparability across MTSs who performed exactly the same task under similar constraints and with the same time frame and resources. The setting is also field like, enabling us to study these tensions in intact MTSs working together for a meaningful amount of time with something to lose (i.e., grades) if the team or MTS fails.

A second potential limitation is the use of dyads as teams. In the present study, teams of all sizes interacted closely, determined a distribution of work tasks, and organized their internal and external activities to accomplish goals. Additionally, previous use of two person teams in MTS research (e.g., DeChurch & Marks, 2006; Marks et al., 2005) suggests it is the presence of a goal hierarchy, and not the number of individuals, that defines an MTS. Strictly speaking, all of the teams in our study follow the traditional conceptualization of teams (c.f. Kozlowski & Ilgen, 2006, p. 79). However, we acknowledge the number of individuals that constitute a team is a long-standing debate.

Finally, our setting includes MTSs composed specially for the 8-week project, with randomly assigned students who had had limited—if any—prior interaction. Thus, it seems credible to assume that communication came first, as part of their efforts to kick off and work on the project, giving ground for the later development of a collective identity. Nevertheless, because we collected self-reports on identity and communication at a single point in time, common method bias and reverse causality cannot be ruled out completely (Podsakoff et al., 2003) and some studies suggest that shared identity between two persons increases the chance that they communicate (Gaertner et al., 2000).

Conclusion

In this research, we show that between-team communication, which facilitates the development of identification with the MTS, comes at a cost to identification with the team. We also identify the role of MTS and team identification in MTS creativity. This research advances our understanding of the complex relationship between the component team and the MTS in which they are embedded. The present study sheds light on how MTS component teams can navigate the inherent complexities of their collaboration structure and bridge boundaries without sinking the team.

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