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Two Pathways To Performance: Affective- And Motivationally-driven Development In Virtual Multiteam Systems

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TWO PATHWAYS TO PERFORMANCE:
AFFECTIVE- AND MOTIVATIONALLY-DRIVEN DEVELOPMENT IN VIRTUAL MULTITEAM SYSTEMS

by

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ABSTRACT

Multiteam systems are an integral part of our daily lives. We witness these entities in natural disaster responses teams, such as the PB Oil Spill and Hurricane Katrina, governmental agencies, such as the CIA and FBI, working behind the scenes to preemptively disarm terrorist attacks, within branches of the Armed Forces, within our organizations, and in science teams aiming to find a cure for cancer (Goodwin, Essens, & Smith, 2012; Marks & Luvison, 2012). Two key features of the collaborative efforts of multiteam systems are the exchange of information both within and across component team boundaries as well as the virtual tools employed to transfer information between teams (Keyton, Ford, & Smith, 2012; Zaccaro, Marks, & DeChurch, 2012).

The goal of this dissertation was to shed light on enabling the effectiveness of multiteam systems. One means of targeting this concern was to provide insight on the underpinnings of MTS mechanism and how they evolve. The past 20 years of research on teams supports the central role of motivational and affective states (Kozlowski & Ilgen, 2006; and Mathieu, Maynard, Rapp, & Gibson, 2008) as critical drivers of performance. Therefore it was my interest to understand how these critical team mechanisms unravel at the multiteam system level and understanding how they influence the development of other important multiteam system processes and emergent states. Specifically, this dissertation focused on the influence motivational and affective emergent states (such as multiteam efficacy and multiteam trust) have on shaping behavioral processes (such as information sharing-unique and open) and cognitive emergent states (such as Transactive memory systems and shared mental models). Findings from

this dissertation suggest that multiteam efficacy is a driver of open information sharing in multiteam systems and both types of cognitive emergent states (transactive memory systems and shared mental models). Multiteam trust was also found to be a critical driver of open information sharing and the cognitive emergent state transactive memory systems.

Understanding that these mechanisms do not evolve in isolation, it was my interest to study them under a growing contextual state that is continuously infiltrating our work lives today, under virtual collaboration. This dissertation sought to uncover how the use of distinct forms of virtual tools, media rich tools and media retrievability tools, enable multiteam systems to develop needed behavioral processes and cognitive emergent states. Findings suggest that the use of media retrievability tools interacted with the task mental models in promoting the exchange of unique information both between and within component teams of a multiteam system.

The implications of these findings are twofold. First, since both motivational and affective emergent states of members within multiteam systems are critical drivers of behavioral processes, cognitive emergent states, and in turnmultiteam system performance; future research should explore how we can diagnose as well as target the development of multiteam system level efficacy and trust. Second, the virtual communication tools that providemultiteam systems members the ability to review discussed materials at a later point in time are critical for sharing information both within and across component teams depending on the level of shared cognition that multiteam system members possess of the task.Therefore the ability to encourage the use and provide such tools for collaborative purposes is beneficial for the successful collaboration of multiteam systems.

Para Mami, Papi, Junito,

Abuelo Luis, Abuela Milagros,

y Titi Tere

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CHAPTER ONE: INTRODUCTION

Statement of the Problem

The Mars Climate Orbiter was built in December 1998 in response to NASA's efforts to find more cost-effective solutions to interplanetary missions. The main purpose of the Mars Climate Orbiter was to study the climate and weather of Mars and the history of water on Mars. In September 1999 the Mars Climate Orbiter lost contact with Earth's team. Rather than enter the Mars orbit, it crashed into the planet's surface. The Orbiter cost 193 million dollars to build, and the cost of the total mission amounted to 327.6 million dollars (figure includes launching, mission operations, and space craft development). The Orbiter was built by teams distributed between Colorado and California, and reports suggest the failure can be largely traced to human collaborative errors (Thompson, 2010; Hinds & Weisband, 2003; Webley, 2010). Teams at the two sites were exchanging information electronically and did not detect that they were designing key parts using different units of measurement: metric and English. In what way did the virtuality of teams play a role in the Orbiter failure?

On September 11, 2001, 19 Al-Qaeda terrorists took control of four commercial flights and used them to attack the World Trade Center and the Pentagon, ultimately killing 2,996 people (including the 19 terrorists). These attacks represent an enormous failure of the US intelligence agencies. Multiple agencies were responsible for analyzing intelligence, including the Central Intelligence Agency (CIA) and the Federal Bureau of Investigation (FBI). The 9-11

Commission's Final Report identified the failure of the FBI and CIA to share information with each other as a critical breakdown. Republican commissioner and former secretary of the Navy, John Lehman, noted, “We need to ensure the fusion and sharing of all intelligence that could have helped us to avoid 9/11” (2004, Associated Press). In what way did the organizational boundaries play a role in the 9-11 terrorist attacks?

The Orbiter and 9-11 terrorist attacks illustrate the potential consequences that can arise when organizational collectives fail to accomplish their goals. These examples illustrate two important structural/contextual factors that complicate teamwork: virtuality and group boundaries, and two processes critical to these collectives: cognition and information sharing. This dissertation seeks to advance our understanding of the cognitive and informational processes so important to the success of virtual, multi-team collectives.

Structuring work around teams has become a steady trend in organizations. The goals teams strive for are often not the ultimate criteria of interest in organizations – rather, team goals are intermediate building blocks of larger goals. Teams specialize and need to coordinate with other teams. The examples above both illustrate the consequences of breakdowns in the handoffs between teams. The unit of analysis capturing the dynamics of multiple teams has been termed the multiteam system (Mathieu, Marks, & Zaccaro, 2001). As organizations adopt these new and more complex infrastructures, researchers need to expand knowledge on the inner workings of multiteam systems. To do this one pertinent area we must focus on is the modes of communication utilized by these systems and how such media impacts information sharing. Communication is the means by which teams create an understanding of the task and arrive at key decisions.

With the increasing transparency of communication technologies, the use of virtual teams and the scope of the projects they undertake are both increasing. Past research has focused on understanding the effects of virtuality on team effectiveness by comparing virtual teams to face-to-face teams (Baltes, Dickson, Sherman, Bauer, & LaGanke, 2002). Yet, the reality is that very little work today is conducted without some form of virtual communication.   Workers rely on instant messaging, online chatting, online message boards, email, teleconferencing, video conferencing, and many more electronic tools to facilitate collaboration. Each of these tools mentioned has its pros and cons and can be characterized along three dimensions of virtuality proposed by Kirkman and Mathieu (2005): use of virtual tools, level of synchronicity, and informational value. We need to understand how information exchanged through distinct media can be more useful to teams in developing distinct cognitive structures, such as mental models and transactive memory systems, both of which have been shown to predict team performance (Lewis, 2003; Mohammed, Ferdanzi, & Hamilton, 2010; DeChurch & Mesmer-Magnus, 2010).

Accordingly, this dissertation makes five contributions to the team effectiveness literature. First, this dissertation will add new knowledge to an increasingly important and little understood area of teamsresearch: multiteam systems (MTS; Mathieu, Marks, Zaccaro, 2001; DeChurch & Mathieu, 2009; Zaccaro, Marks, & DeChurch, 2011). As organizations continue to structure work around teams as the basic unit, teams need to collaborate across boundaries as components of larger systems of teams. This dissertation will add foundational knowledge to our understanding of the inner workings of multiteam systems.

Second, this dissertation will shed light on the mechanisms through which two emergent states known to be important to teams – motivation and affect- shape the dynamics of multiteam systems. It is important to examine the relative impact of motivational and affective states on behavioral processes and cognitive emergent states and how they influence multiteam system functioning. By uncovering the mechanisms through which motivational and affective emergent states impact multiteam system performance we can better inform the development of scientifically-based interventions.

Third, this dissertation will contribute to our knowledge on the type of information sharing that takes place in virtual teams and the processes that lead to such behaviors. Meta-analytic work by Mesmer-Magnus, DeChurch, Jiménez, Wildman, and Shuffler (2011) and Mesmer-Magnus and DeChurch (2009) notes that information sharing is positively related to team performance. The authors of these two meta-analyses have discovered that the type of information shared among team members is distinctly predictive of team performance dependent on team context. Mesmer-Magnus and DeChurch concluded that in face-to-face teams unique information sharing is more predictive of performance than open information sharing although teams tend to engage more in this form of information sharing. Mesmer-Magnus et al. deduced that yes, unique information sharing is more predictive of performance but only for face-to-face teams; for virtual teams open information sharing is more predictive of team performance than unique information sharing, even though virtual team members tend to engage in more unique information sharing. Therefore, the next steps should focus on understanding what team processes encourage the exchange of both unique and open information sharing. This dissertation will look at how collective efficacy and trust shape the exchange of information that takes place between teams.

Fourth, this dissertation will explore the development of cognition in these complex systems. Research has shown that three distinct mediators, taking the form of processes and emergent states, have been the essence of effective teams. These mediating mechanisms have been classified into affective or motivational states, behavioral processes, and cognitive emergent states (Kozlowski & Bell, 2002; Kozlowski & Ilgen, 2006; and Mathieu et al., 2008) sometimes referred to as the ABCs of teamwork (Salas, Rosen, Burke, & Goodwin, 2009). Meta-analytic work by DeChurch and Mesmer-Magnus (2010) has shown that cognition is one of the most influential mechanisms that contributes to team performance. This meta-analytic evidence demonstrates the importance of team cognition as a driver of team performance, therefore understanding how cognition is developed and how cognition influences other virtual multiteam mechanisms is critical for the advancement of the effective functioning of multiteam systems.

Fifth, as most multiteam systems operate with some degree of physical distance, it is critical to understand the impact of virtual communication on their functioning. This dissertation will explore the impact of virtuality on multiteam dynamics. Research on the impact of virtuality has often represented virtuality at two points, comparing and contrasting virtual teams to their face-to-face counterparts. This study takes a more advanced approach and tests the impact of two virtuality tools 1) media rich and 2) media retrievability tool (provide high informational value) on the development of behavioral and cognitive processes.

Literature Review

Multiteam Systems

Keeping on the cutting edge of business today has led many organizations to venture out beyond teams. As the nature of organizational work changes due to trends toward globalization, flattening of organizational structure, and outsourcing of work, much work ends up being accomplished by system of teams working together rather than just one team. In many instances, many organizations have to collaborate with teams in other departments within the same organization, with teams in other organizations, or be part of global teams. Recent work by Mathieu, Marks, and Zaccaro (2001) defined “two or more teams that interface directly and interdependently in response to environmental contingencies toward the accomplishment of collective goals” as multiteam systems (from this point forward MTS or system will be used interchangeably to refer to multiteam systems; p. 290).

As noted by Zaccaro, Marks, and DeChurch (2011) one of the key defining features of MTSs is the interdependence that takes place both within and across teams. In the earliest work on MTS, Mathieu, Marks, and Zaccaro (2001) define the interdependence that takes place in MTSs as “a state by which entities have mutual reliance, determination, influence, and shared vested interest in processes they use to accomplish work activities (p. 293).”It is through these distinct forms of interdependence, resource interdependence, process interdependence, and outcome interdependence (Mathieu, Marks, Zaccaro, 2001; DeChurch & Mathieu, 2009; Zaccaro, Marks, DeChurch, 2011; Mathieu, 2011) that MTSs successfully attain both proximal team goals and distal system goals.

Models of Team and Multiteam Performance

As noted by McGrath (2000), teams are dynamic, complex, adaptive systems. As such, team researchers have sought a way to understand the intervening mechanismsthrough which teams convert inputs into outputs. The first framework for understanding team performance is the input-process-output (IPO) model (McGrath, 1964; Hackman, 1987); the second is the expanded input-mediator-output-input (Ilgen, Hollenbeck, Johnson, & Jundt, 2005) model. The premise behind both models is that inputs (e.g., team composition, training programs, leadership) shape group states and interaction processes (e.g., cohesion, trust, collective efficacy, coordination, backup behavior, development of transactive memory systems, and shared mental models). Group states and processes, in turn, impact team effectiveness (e.g., speed to market, team effectiveness, team efficiency, and reduced errors).

Over the years, teams researchers have posited that there are three critical types of processes that are vital to team effectiveness. These mechanisms are organized into three overarching categories: 1) affective/motivational, 2) behavioral, and 3) cognitive (DeChurch & Mesmer-Magnus, 2010; Kozlowski & Ilgen, 2006; Salas, Rosen, Burke, & Goodwin, 2009). Research on these mechanisms has made salient the importance of distinguishing between team processes (mechanisms that change inputs to outputs) and emergent states (constructs that emerge over time as team members interact and the team develops"; p. 79; Kozlowski & Ilgen, 2006). Work by Marks, Mathieu, and Zaccaro (2001) provided a taxonomy to classify team processes and team emergent states. They defined team processes as "interdependent acts that convert inputs to outcomes through cognitive, verbal, and behavioral activities directed toward organizing task work to achieve collective goals" (p. 357; Marks, Mathieu, & Zaccaro, 2001). In other words, team processes are the mechanisms by which team members take inputs, such as team expertise and convert them into team outputs. Emergent states, on the other hand, have been defined as "constructs that characterize properties of the team that are typically dynamic in nature and vary as a function of team context, inputs, processes, and outcomes" (p.357; Marks, Mathieu, & Zaccaro, 2001).

Multiteam system states and processes, like team states and processes, can be categorized into three overarching constructs: affective, behavioral, and cognitive. MTS emergent states are dynamic properties of the system: they represent a capacity for action; they shape and constrain interaction between teams; and they evolve as component teams in the system interact over time. Similarly, multiteam processes are behavioral interactions between teams through which team inputs are transformed into multiteam outcomes.

The primary distinction between team and MTS processes and states is the level of focus. In team processes and states, members joined toward a team goal are interacting, whereas with multiteam processes, the interactions are occurring among the members of distinct teams (Zaccaro, Marks, & DeChurch, 2011; DeChurch & Mathieu, 2009). Team processes are termed intrateam processes in the context of a multiteam system. Intrateam processes such as backup behavior commence among the team members of one's team. Interteam or multiteam processes involve the interactions among members of distinct teams, such as information exchange or coordination between teams. Research has suggested that when component teams work toward their own team goals, intrateam processes are more predictive of performance (Marks et al., 2005), whereas when teams work toward the system's goal, interteam processes are the driving mechanisms that enable success.

Work by DeChurch and Zaccaro (2010) has noted that multiteam system effectiveness requires an understanding of both the dynamics occurring within teams and the dynamics occurring between teams. For instance, DeChurch and Marks (2006) found leadership aimed at the between-team interface improves multiteam performance by way of inter-, and not int-team process improvement. Similarly, work by Mathieu, Cobb, Marks, Zaccaro, and Marsh (2004) found that when training was focused on within team processes, system performance was not as effective as when training was directed at cross-team processes. This evidence, suggests that it is important to understand the determinants of multiteam system processes and performance.

Emergent States

Within the team literature a number of affective and motivational attitude constructs have been noted as imperative for the functioning of effective teams (Salas, Rosen, Burke, & Goodwin, 2009; Mathieu et al., 2008): for instance, collective orientation (Driskell & Salas, 1992; Mohammed & Angell, 2004), collective efficacy (Bandura, 1986; Zaccaro, Blair, Peterson, & Zazaries, 1995), team learning orientation (Bunderson & Sutcliffe, 2003), team cohesion (Beal, Cohen, Burke, & McLendon, 2003; Zaccaro, Gualtieri, & Minionis, 1995), trust (Salas, Sims, & Burke, 2005), team empowerment (Mathieu, Gilson, & Ruddy, 2006; Kirkman, Rosen, Tesluck, & Gibson, 2004), and team goal commitment (Aubé & Rousseau, 2005). These emergentstates are thought to be the mechanisms that drive team members to act in a certain way due to the circumstances they foresee. As such these forms of emergent states and how they impact multiteam system processes are important for the future effective functioning of multiteam systems.

Team and MTS Efficacy

As noted in the paragraph above a number of motivational variables (e.g., collective orientation and collective efficacy) exist. One construct thatcan manifest itself distinctly at the team and system level is efficacy. Collective or team efficacy is defined as a team's shared belief in their capability to successfully perform a given task (Bandura, 1997). If team members have high confidence in their team's ability to perform a given task, then teams are more likely to successfully perform when faced with novel and unexpected situations. A team's confidence in the team's likelihood to succeed is what motivates them to perform when faced with challenging and novel tasks. Therefore, collective or team efficacy is an emergent state that acts as a driver of behavior based on team members' experience of working together. The time and experience of working on a task together provides members a platform to base their potentialsuccess and in turn future actionsMathieu et al., 2010).

MTS efficacy goes beyond team members focusing on their team's potential and taking stock in the possibilities of the system's ability to successfully accomplish its goal. Due to the inherent interdependence between teams of a multiteam system, the capability of teams in a system effectively completing their team's task while simultaneously completing the system's task becomes a critical driver of performance. Having faith in the ability of other teams' capabilities, when limited exposure may exist between them, can provide a stronger indicator of behavior that will take place between teams. Thus, the reliance on such teams for the success of the mission at hand puts this process at the forefront of our understanding in how it affects multiteam functioning.

Research focusing on the effects of efficacy on team processes has been scant. Work has primarily reviewed the effects of collective efficacy on team performance (Gully, Incalcaterra, Joshi, & Beaubien, 2002; Stajkovic, Lee, & Nyberg, 2009; Srivastava, Bartol, & Locke, 2006;

Campion, Medsker, & Higgs, 1993; Campion, Papper & Medsker, 1996; Gibson, 1999; Shea & Guzzo, 1987; Gully, Incalcaterra, Joshi, & Beaubien, 2002), job satisfaction, lower levels of exhaustion and turnover intentions (Zellars, Hochwarter, Perrewe, Miles, Kiewitz, 2001), and the mediating role that team efficacy has on the relationship between team cognition and performance (Mathieu, Rapp, Maynard &Mangos, 2010; Liu & Zang, 2010). Work by Gully et al. (2002) suggests that the relationship between team efficacy and team performance is enhanced when task interdependence between teams is high. If we turn back to the definition of an MTS, one defining feature is the interdependence between teams. Specifically, MTSs are defined as highly interdependent coupling of teams that strive toward a shared system goal while simultaneously attaining their individual team goal. Focusing on collective efficacy at the individual team level is distinct from the system level. At the system level, a number of factors come into play. For example, the competing nature between teams for resources, the ability to simultaneously work towards team and system goals, and the time constraints placed on the completion of simultaneous goals.

Building on team efficacy and the definition posited by Gibson (1999), multiteam system efficacy can be viewed as a between-team emergent state where teams in the system believe other teams in the system are capable of successfully performing a given task. More specifically, each team would believe that other teams are capable of attaining their individual team goal as well as successfully contribute to the system level goal. If a system experiences high multiteam system efficacy then the system will have the confidence that it will see its way through unforeseen events or challenges when faced with them. If a system possess low MTS efficacy, they are less likely to believe that component teams within the system are capable of attaining their individual goals or their contributions to the system level goal. As a result, teams may be less motivated to engage in behaviors that benefit the system and in turn the system may fail on their given task.

Team and MTS Trust

As organizations reap the benefits of teams, more and more employees are working together. Interdependent collaboration affords employees a stepping board to develop bonds and relationships with fellow teammates. One such bond created is trust, which has been defined as "the willingness of a party to be vulnerable to the actions of another party based on the expectation that the other will perform a particular action important to the trustor, irrespective of the ability to monitor or control that other party" (p.712; Mayer, Davis, & Schoorman, 1995). Researchers have focused on the theoretical trust model proposed by Mayer, Davis, and Schoorman (1995), comprised of 3 dimensions: ability, benevolence, and integrity. Ability one of the principle components states that the trustor must believe or have faith that the trustee is well versed in his or her area of expertise in order to trust him or her on future tasks (Mayer et al., 1995). Benevolence has been defined as the belief that the trustee is doing things out of good will and has no egotistic motives (Mayer et al. 1995). Lastly, integrity has been defined as a trustor's perceptions that the trustee follows a set of implicitly defined rules found to be acceptable by each (Mayer et al., 1995).

Moving beyond the traditional three-dimensional approach of trust, researchers have also conceptualized trust as being a rational or social process (Jarvenpaa, Knoll, & Leidner, 1998; Kramer & Tyler, 1996). The rationale posits that trust is a calculated factor based on a person's self interest (Mayer, Davis, & Schoorman, 1995). Whereas the social perspective relies on people's moral obligations or how they may believe they should act towards others (Kramer & Tyler, 1996; Mayer, Davis, & Schoorman, 1995). Whether one takes the traditional three dimensional approach (ability, benevolence, and integrity) or the two dimensional focus (rationale and social), it is safe to conclude that trust is an emergent process that is shaped through continuous exposure and the experience of working with members of a team.

Meta-analytic work on trust at the individual level has shown that trust is a positive driver of three job performance dimensions (Colquitt, Scott, & LePine, 2007). Specifically, the authors found, through accumulation of the literature, that trust is positively related to task performance and citizenship behavior and negatively related to counterproductive work behavior. In addition the authors found that trust was positively linked to individual's propensity to take risks (Colquitt et al., 2007). Team trust has also been linked to outcome variables such as team member's attitudes towards the organization, task performance, and team satisfaction (Costa, 2003).

Work focusing on the effects of team trust on team processes suggests that team trust has been positively linked to team members engaging in cooperative behavior and negatively related to team members monitoring coworkers' behavior (Costa, Roe, and Taillieu, 2001). In other words the more trust team members possess for teammates, the more likely they are to help each other out when they believe team members need assistance, but at the same time, they are less likely to consistently be monitoring their teammates situation, because they have faith in their teammates to perform their tasks. Contextual factors, such as work autonomy bring in new dynamics. Work by Langferd, (2004) took into consideration the affect of trust on the negative relationship between work autonomy and performance. Langferd found that teams that the negative relationship between autonomy and performance is intensified when team s experience low levels of trust rather than when the level of trust is high. Thus, in self-managing teams the presence of too much trust could be harmful if the task at hand permits for greater levels of work autonomy. Additionally, Langfred concluded that in self-managing teams, the presence of some level of monitoring must be in place in order to avoid processes loss and poor performance. Thus far, this review of the team trust literature has been based on face-to-face teams. With the prevalence on virtual teams and the reliance on a number of virtual communication tools that limit face-to-face interaction, developing virtual trust in teams has become a challenge for both practitioners and scientist.

Virtual teams are placed at a disadvantage that face-to-face teams do not encounter. Although, video conferencing provides virtual teams with the ability to meet face-to-face with team members, virtual teams tend to experience far fewer of these exchanges, even if they are through some form of virtual medium. Virtual team research considering the interdependence between team members has noted that trusts among members is positively related to communication under high levels of interdependence (Rico, Alcover, Sanchez-Manzanares, & Gil, 2009). Work focusing on the distribution of team members suggests, that dispersion can have detrimental effects on trust. Work by Polzar, Crisp, Jarvenpaa, and Kim (2006) found that teams with two colocated subgroups, and therefore more colocated peers, exhibit less trust than fully dispersed teams. Additionally, the authors noted that the size of the dispersed groups, particularly those that have fewer equally sized subgroups, experience less trust than teams arranged in more similar configurations across locations (Polzar et al., 2006).

Additionally, the limited face-to-face interaction also places virtual teams at a disadvantage in establishing personal bonds and relationships with fellow teammates. Many of us have heard, if not partaken in, of the infamous water cooler conversation with fellow coworkers. It is during these times that teammates not only get to know each other on a more personal level, but also that idea generation continues once formal meetings are over. Through these extra interactions with teammates where members get to know each other's work and get to exchange ideas, team members begin to build trust and value for members of their team. Qualitative research of trust in virtual teams has shown that teams differ in the strategies that help them develop trust. Teams that showed high trust engaged in a number of strategies such as being more proactive andkeeping an optimistic tone throughout their interaction (Jarvenpaa Knoll, & Leidner, 1998). The authors also noted that in teams exhibiting high trust individuals took initiative in taking on task responsibilities and time management was explicit and process-based. Teams characterized as having high trust tended to providepredictable and substantive feedback to members. Lastly, teams that were noted as having high trustwere more likely to engage in intense bursts of interaction/communication between members (Jarvenpaa et al., 1998). The noted limitations that virtual teams are exposed to can be translated to MTS. In many instances the means of communication for component teams both within and across team boundaries is through some form of virtual collaboration tool.

In MTS, teams simultaneously work independently toward their own team goals while also working interdependently towards a system goal (DeChurch & Mathieu, 2009; Mathieu, Marks, & Zaccaro, 2001). Team's research has shown that team trust can be beneficial, by increasing team information sharing (Mayer, 1995), providing backup behavior to team members (Costa et al., 2001), and engaging in more citizenship behavior (Colquitt, 2007). Yet, it is still not clear how trust emanates itself at the system level. Expanding on Mayer et al. (1995) work on trust, MTS trust can be defined as the willingness of a team to be vulnerable to the actions of another team, based on the expectation that the other team will perform a particular action important for the system's performance. Limited research exists on our understanding of how MTS trust is developed and once developed how it affects MTS processes. Work by Serva, Fuller, and Mayer (2005) showed that trust across teams is developed through the actions taken by a team and another team's perception of those actions. In other words, reciprocal trust is established throughout a team's life cycle because teams are able to exhibit their vulnerability to trust one another and continuous exposure of this behavior prompts similar behavior to occur. Building onto these and previous findings on trust research in both teams and multiteam systems is the next step in obtaining a clear understanding of how trust manifests itself at the system level.

Team and MTS Cognition

Team cognition represents the "structure of collective perception, cognitive structure, or knowledge organization, and knowledge or information acquisition" (pp.81, Kozlowski & Ilgen, 2006). Research has shown that distinct types of cognition have been theorized (Cannon-Bowers, Salas, & Converse, 1993) and shown (Mohammed, Ferdanzi, & Hamilton, 2010; DeChurch & Mesmer-Magnus, 2010) to be among the most critical drivers of team performance. Team cognition has been discussed as more than an individual process, but rather it is a collective level phenomenon (Klimoski & Mohammed, 1994) that emerges through interaction. Over the years two predominate constructs comprise the team cognition literature, transactive memory systems

(Wegner, 1986; 1995, Wegner, Giuliano, & Hertel, 1985; Lewis, 2003; Austin, 2003; Faraj & Sproull, 2000) and mental models (Cannon-Bowers, Salas, & Converse, 1993; Klimoski & Mohammed, 1994; Mohammed & Dumville, 2001).

Transactive Memory Systems

The first construct is transactive memory systems (TMS); Wagner (1987) defined TMS as a cognitively interdependent system based on a set of individual memory systems, which provides knowledge of which members of the team possess particular task relevant knowledge (Wagner, 1987; Mohammed & Dumville, 2001). The study of TMS involves "the prediction of group behavior through an understanding of the manner in which groups process and structure information" (pp. 187, Wagner, 1987). TMS can be conceptualized as a knowledge network of unique information possessed by team members. "When each team member learns in a general sense what other team members know in detail, the team can draw on the detailed knowledge distributed across members of the collective" (pp. 85. Kozlowski & Ilgen, 2006). The development of transactive memory has been attributed to three (Lewis, 2003) to four (Austin, 2003) dimensions that target the following areas: 1) awareness of where knowledge lies within the team, 2) trust or credibility in others' knowledge, and 3) the ability to effectively coordinate the retrieval of information (Lewis, 2003; Wegner, 1987).

Research on TMS has posited that antecedents of TMS include task interdependence (Zhang, Hempel, Han, & Tjosvold, 2007), cooperative goal interdependence (Zhang et al., 2007), support for innovation (Zhang et al., 2007), team stability (Akgun, Byrne, Keskin, Lynn, & Imamoglu, 2005), and team familiarity (Akgun, 2005; Smith-Jentsch, Kraiger, Canon-Bowers, &

Salas, 2009). TMS has also been linked to distinct team processes and outcomes, such as backup behavior (Smith-Jentsch et al., 2009), trust (Akgun et al., 2005), team efficacy (Smith-Jentsch et al., 2009), external evaluations (Austin, 2003), and internal evaluations (Austin, 2003), team learning (Akgun, Bryne, Keskin, Lynn, 2006), collective mind (Yoo & Kanawattanachai, 2001), team performance (Austin, 2003; He, Butler, & King, 2007; Lewis, 2003; Zhang et al., 2007), virtual team performance (Yoo & Kanawattanachai, 2001; Kanawattanachai & Yoo, 2007), goal attainment (Austin, 2003), and speed to market (Zhang et al., 2007). As the evidence suggestTMS has received substantial attention as a means via which teams can function more effectively. In conjunction with TMS over the years teams researchers have also promoted the investigation of shared mental models as a way to enhance team effectiveness.

Shared Mental Models

Shared Mental Models (SMM) have been defined as the team's shared understanding of their teammates, teamwork, taskwork, and equipment (Cannon-Bowers, Salas, & Converse, 1993). SMM are a way of understanding the implicit coordination that takes place between team members based on their shared understanding of the situation or mission. Over the years, four distinct SMM have been discussed in the literature. First,the teammate SMM consists of the shared understanding between team members' expertise and their understanding of how each member contributes to the task at hand. Second, the teamwork SMM focuses on the interactions that must take place between members in order to successfully attain the team's goal. Third, the taskwork SMM is a shared understanding of the task at hand and how to best approach the problem space. Lastly, the equipment SMM consists of a shared understanding of the tools and technology used during the task at hand. Mathieu et al. (2000, 2005) articulate that these four reflect two overarching types: task and team.

A recent review of the SMM literature by Mohammed, Ferdanzi, and Hamilton (2010) shows that SMM have been linked to a number of distinct processes (Mathieu, Heffner, Goodwin, Salas, & Cannon-Bowers, 2000; Mathieu, Heffner, Goodwin, Cannon-Bowers, & Salas, 2005) such as back-up-behavior (Marks, Sabella, Burke, & Zaccaro, 2002), coordination (Marks, Sabella, Burke, & Zaccaro, 2002), and communication (Marks, Zaccaro, & Mathieu, 2000). Additionally, SMM have been related to a number of team effectiveness indicators, such as team performance (Cooke, Kiekel, & Helm, 2001; Lim & Klein, 2006; Mathieu, Heffner, Goodwin, Salas, & Cannon-Bowers, 2000; Mathieu, Heffner, Goodwin, Cannon-Bowers, & Salas, 2005; Edwards, Day, Arthur, and Bell, 2006; DeChurch & Mesmer-Magnus, 2010), team viability (Rentsch & Klimoski, 2001), and client satisfaction (Rentsch & Klimoski, 2001).Although these findings have provided us a stepping stone for building our knowledge of how these SMM may function in MTS. As noted earlier, our understanding of how teams function cannot simply be aggregated to explain MTS functioning (DeChurch & Zaccaro, 2010).

As a result, the question still remains, how is cognition represented at the MTS level? And how does this pattern of system-level cognition impact performance? One team's understanding of another team's expertise and shared understanding of the task at hand, would be beneficial for MTSs. We can see that MTSs would benefit in ways, such as having the ability to coordinate faster, via implicit coordination. Additionally, as component teams of MTSs become more dependent on technology for communication and sharing of information, they are likely to be more efficient by limiting the time they spent communicating with members that do not have the knowledge relevant for the task at hand and going directly to members that hold vital task relevant information. Lastly, having a shared understanding of how the system plans on approaching a given situation, may serve fruitful in the event that systems have to adapt to situational factors, for instance, receiving information that is not pertinent to their own team's, but is to the other team's task. A system's ability to possess a shared schema of the situation should enable more effective communication and in turn performance by the system as a whole.

Information Sharing

Information sharing (IS) is a behavioral process by which collectives exchange relevant tasks and knowledge with one another (Staples & Webster, 2008; Stasser & Titus, 1985, 1987). Work by Stasser and Titus (1985, 1987) has rooted the IS literature by noting that teams posses both a) shared information (information that all members of a team hold) and b) unshared/unique information (information that is uniquely held by members of a team). Our understanding of collectives is that they can benefit from pooling distinctly held knowledge, and in doing so, reach better decisions than if they would be based on common information. For some time now researches have sought to understand why IS in collectives tends to be biased toward the discussion of common information. Work by Stasser and Titus (1985, 1987) suggest that "groups tend to be dominated by information that members hold in common before a group discussion and information that supports members' existing preferences" (pp. 1467).

Recent meta-analytic work by Mesmer-Magnus and DeChurch (2009) echoes these findings by suggesting that teams are more inclined to share commonly held information than unique information even though the latter has been found to be more predictive of team performance. Therefore, if teams tend to experience issues fully aggregating unique information in teams, the problem likely compounds as an additional boundary is introduced.

Furthermore, how would information sharing affect interactions, such as the development of cognitive processes and outcomes, such as team performance? IS at the system level is a critical issue, when we take into consideration the success of multiple teams and the system as a whole. If a team does not have all information at hand, prior to making a decision, the likelihood of the team performing successfully is diminished. As noted by De Dreu, Nijstad, and van Knippenberg (2008) through task communication, teams are able to develop a shared understanding of the task and arrive at a better solution. A team's performance will in turn have compounding effect on system performance. More importantly, when we turn to MTS, IS becomes more complex.

MTS IS can be defined as the exchange of information between component teams in a system. MTS IS can be conceptualized in terms of its openness and uniqueness both within and across teams of a system. The openness of MTS IS is the forthcoming and frequent exchange of information within and across team boundaries. The uniqueness of MTS ISis the extent to which information initially contained by a single team member is exchanged with members within and across his other team.

Virtuality

Virtual communication has enabled work to be coordinated and accomplished by larger, more diverse sets of individuals. Virtuality has also greatly increased the flexibility of work enabling individuals to connect from different locations and at different times. With this improved capacity to connect through technology comes a range of positive and negative implications. Virtuality hasinfiltrated our work world and has enabled much advancement, such as international collaborations, global ventures, teleworking from distinct locations and the ability to stay in touch any time. However, the Orbiter example clearly illustrates the consequences that can result if communication media do not allow the same quality of information exchange afforded by face-to-face contact. Organizations are now conducting work virtually, heavily relying on email, conference calls, instant messaging services, video conferencing, shared work space, and many more virtual tools.

Although virtual communication has been adopted due to its ability to provide individuals the ability to coordinate business from distinct locations, unite experts of individuals from different time zones, provides flexibility from where work is conducted, and provide faster communication, much of the research thus far conducted on virtual teams limits our understanding of teams use of virtual tools because the comparison has been between virtual teams, i.e., those for whom all information exchange is through some type of technology, and face-to-face teams, i.e., those for whom all information exchange occurs in person (Baltes, Dickson, Sherman, Bauer, & LeGanke, 2002). Given that most teams use a variety of virtual tools, and use them for different purposes, much more can be learned about virtual effectiveness by considering how particular tools enable the exchange of particular types of information, and differentially affect the core aspects of team functioning.

Past work on virtual teams which compares virtual and face-to-face teams generally supports three conclusions. First, computer-mediated communication is related to a decrease in team effectiveness when compared to face-to-face teams (Hedlund, Ilgen, & Hollenbeck, 1998;

Baltes et al., 2001). Second, virtual teams are less efficient, due to the additional time it takes to communicateas compared to face-to-face teams (Baltes et al., 2002). Third, members of virtual teams tend to be less satisfied when compared to face-to-face teams (Baltes et al., 2002).

This sort of analysis is not particularly useful for two reasons. First, it assumes that "virtuality" is a leverage point or choice for the organization when often it is not. Virtual communication has become the norm. Even so called face-to-face teams often communicate significant amounts of information using virtual tools. Second, this analysis doesn't account for differences in the type of virtual communication. Tools differ on multiple dimensions including how synchronous they are, and the richness of cues they convey. These features likely have important implications of their relative utility in sending/receiving different types of information.

Work by Kirkman and Mathieu (2005) provided a taxonomy of the distinct features that describe virtual teams: use of virtual tools, synchronicity of interaction, and informational value. The latter two dimensions provide a starting point to conceptualize the benefits and drawbacks of various tools. Specifically, tools that are more synchronous are tools that provide for virtual communication to occur in real time, such as video chats and conference calls. Tools that are asynchronous imply that a lag occurs between the time a person sends a message and the intended receiver receives it. Informational value or media richness implies that there is a "lower level of virtuality" (pp. 703). More specifically, Skype or video conference calls would be considered to have high media richness because they provide for both, verbal and non-verbal (visual) communication. Electronic chat rooms or email would be considered to have low media richness because they only provide a platform for verbal communication or written communication (Kirkman & Mathieu, 2005).

I propose an important additional dimension, retrievability, is extent to which the tool affords a written record of the interaction that can easily be referred back to by team members. The need for this explanatory dimension comes from a recent meta-analysis on virtuality and IS in teams. Mesmer-Magnus, and her colleagues found that whereas unique IS is more predictive of performance for face-to-face teams, in virtual teams, IS openness is more predictive of performance than is unique IS. A way to interpret this finding is that the type of IS needs to match the tool being utilized. Asynchronous and low richness tools are stripped of social cues and therefore, teams need the "openness" dimension of IS – i.e., reiterating what another member has said – in order to built needed emergent states and enhance their effectiveness. Conversely, in face-to-face teams, or those using very rich tools like video chat, it is the unique IS that is critical to performance. These teams can rely on the media to provide rich information about the comprehension of information by their teammates, and teammates reactions to information. Therefore, the tool provides access to these proxies for IS openness.

One concern that this brings to our attention is the impact the virtual communication can pose for multiteam system collaboration. How do distinct virtual tools help or hinder the information being shared among members? Furthermore, how does sharing information through virtual tools impact the development of team processes, such as IS processes and the development of cognitive processes? Are certain tools more conducive to teams sharing unique or open information?

Theory Development and Hypotheses

Organizations are progressively becoming virtual. Virtual organizations are defined as "a collection of geographically distributed, functionally and/or culturally diverse entities that are linked by electronic forms of communication and rely on lateral, dynamic relationships for coordination" (p. 693; DeSanctis & Monge, 1999). Virtual teams that reside within these organizations have been noted to be heavily electronically dependent due to their remote collaboration (Kirkman & Mathieu, 2005; Gibson & Cohen, 2003; Gibson & Gibbs, 2006). The collaboration that takes place in virtual organizations can be viewed through a multiteam system lens.

This dissertation examines MTS interacting in a context characterized by virtual communication between teams, and asks which factors determine their success? The model presented in Figure 1 posits that two emergent states shape the types of process interactions that commence among teams. The affective route, initiated by trust between teams, impact the IS openness, which in turn affects the development of shared mental models, and ultimately MTS performance. The second motivational route, initiated by efficacy, shapes the sharing of unique information, transactive memory, and in turn, MTS performance. Lastly, the strength of the relationships between information sharing processes and performance are posited to depend on the richness and retrievability of the tool used to transmit information across teams. The current study enables MTS to choose how and when to communicate using three available tools: instant messaging, voice call, and video call. These tools can be ordered according to the extent to which retrievability is maximized (text>voice, video) and information richness is maximized (video>voice, text). This dissertation will test the extent to which not only the type of IS or type of communication media impacts the development of MTS cognition, but additionally, that the match between sending particular types of information using particular tools optimizes the development of two cognitive architectures in MTS. These two pathways to performance, motivationally –driven and affectively-driven.

Motivationally-Driven Development

In order to understand the motivationally-driven development, resource allocation theory is referenced. Resource allocation theory posits that an individual's "cognitive resources can be conceptualized as an undifferentiated pool, representing the limited capacity of the human's information-processing system" (p. 663; Kanfer & Ackerman, 1989). The authors note that attentional demands are greater in the early stages of a task, specifically if the task is novel in nature. Resource allocation can help us understand individual motivation. For instance, individuals that are part of MTS have to determine whether to allocate resources towards their team or towards the MTS. If individuals perceive high efficacy towards the MTS, then they believe that the MTS is capable of attaining its goals. If individuals possess low efficacy towards the MTS, then individuals believe that the MTS does not the ability to accomplish the tasks at hand. In the case that individuals believe that the MTS possess the capability to successfully attain its goals, this will lead individuals to allocate resources to system level goals. This motivational state then creates the energy pool oriented toward the MTS task. The next question is: how does this drive state translate into concrete interaction capable of influencing performance?

Research on virtual teams, and on MTS, has posited that the probability of performing well is enhanced via a number of distinct processes (Marks et al., 2005; DeChurch & Marks, 2006). Amongst the distinct processes, one critical behavioral processes for effective teams is information sharing (Bunderson & Sutcliffe, 2002; Staples & Webster, 2008; Stasser & Titus, 1985, 1987). Meta-analytic evidence has supported the idea that information sharing is essential for team performance (Mesmer-Magnus & DeChurch, 2009).

The literature has suggested that teams tend to engage in two distinct types of IS: unique IS and open IS. Unique IS refers to the distribution of information prior to a collaborative discussion, specifically, “information that is unshared before discussion”; p. 1476 & 1477; Stasser & Titus, 1985). This information is not shared by other members of a team and is critical in order to incorporate when making a decision. Without unique IS the decision arrived at may not be the best or most well informed decision.

IS is a critical behavioral process in teams. Due to the complexity of MTS (e.g., distinct teams contributing towards a system goal, while simultaneously working towards their own goals) ISuniqueness is the crux that allows systems to function effectively. One question that arises is what promotes MTSIS uniqueness, when members could simply share information within their own team? In other words, why would members of a team expend resources towards the system’s performance? If all members of a system share in their belief that the system is capable of attaining its goals, then they would be more inclined to share unique information then when efficacy is low.

H1: MTS efficacy is positively related to MTS IS uniqueness.

H2: MTS IS uniqueness is positively related to MTS performance.

As teams engage in unique MTS IS uniqueness they are able to begin building a shared understanding of the situation/task at hand (Hollingshead & Brandon, 2003). As teams begin to build a shared understanding through communication, they begin to understand how each individual within the team can individually contribute his or her knowledge to the task (Hollingshead & Brandon, 2003). Specifically, awareness is brought to the expertise that each individual can supply. This awareness provides team members the ability to communicate information in a timely manner (provides for implicit coordination) when members are aware who the information should be communicated to. Thus, via unique cross team IS, teams are able to build a system level TMS which provides them the ability to directly coordinate more efficiently and effectively across teams (Austin, 2003; He, Butler, & King, 2007; Lewis, 2003; Zhang et al., 2007).

H3: MTS IS uniqueness is positively related to MTS performance through (i.e., mediated by) the development of MTS TMS. As teams exchange more MTS IS uniqueness, they will develop more accurate MTS TMS than if they exchange less MTSIS uniqueness. The more accurate a system's TMS, the better the system will perform. Thus, TMS acts as a mediator in the MTS IS uniqueness- MTS performance relationship.

Affect-Driven Development

Whereas the first state influencing MTS interaction is motivational, members of distinct teams need the drive to allocate resources to the larger system goal, a second emergent state is also a necessary precursor to MTS effectiveness: trust. The physical separation of members and component teams limits the developmental processes that traditional teams experience that are critical in fostering trust. For instance, virtual team members are less likely to share information about them via electronic communication, limiting their ability to establish personal relationships with members of their own team and component teams. The literature on geographically dispersed teams emphasizes the lack of trust developed between virtual team members as an issue that hinders successful performance (Jarvenpaa & Leidner, 1999).

As teams begin to trust each other they are more inclined to partake in problem solving, become more forward with providing task relevant information, are more critical and question each other, and provide assistance to other members when they believe it is required. Work by Staples and Webster (2008) has shown that trust within teams leads to greater IS across local, virtual, and hybrid teams (part of the team is local and part of the team is remote). In many instances, the feeling of belonging develops into trust, providing members the ability to be vulnerable and share information with other members. As noted earlier, IS has been described as the sharing of unique or open information. IS openness has been defined as a "conscious and deliberate attempts on the partof team members to exchange work-related information, keep one another apprised of activities, and inform one another of key developments" (p. 881; Bunderson & Sutcliffe, 2002). If individuals believe they can trust one another with task related responsibilities, they will be more open to share information that is pertinent to the task at hand. Work by Ridings, Gefen, and Arinze (2002) showed that within teams, individuals that trusted one another's ability and integrity both gave and got more information than their non trusting counterparts.

H4: MTS team trust is positively related to MTS IS openness. Such that when teams feel more MTS trust they are more inclined to engage in MTS IS openness.

Distinct processes have been noted to be critical for the success of teams. One such behavioral process is communication (He, Butler, & King, 2007) which is the means by which IS openness takes place. Meta-analysis compiling research over 20 years on the relationship between team IS (both unique and open) and performance has shown a consistently positive relationship (Mesmer-Magnus & DeChurch, 2009; Mesmer-Magnus, DeChurch, Jiménez, Wildman, & Shuffler, 2011; Yoo &Kanawattanachai, 2001). Therefore, as systems engage in MTSIS openness, the flow of information being exchanged between teams is greater, providing members more instances to understand the importance of task relevant information, which can result in better performing systems.

H5: MTS IS openness is positively related to MTS performance.

As teams engage in more IS openness teams may encounter a number of advantages and disadvantages. First, individuals may register the sharing of information as a welcoming culture. Second, team members are likely to reiterate information already pointed out by a team member when engaging in open information sharing. Third, teams may be more inclined to believe the information that is being processed and shared by members of the team; this has been noted as a common pitfall of hidden profiles (Stasser & Titus, 1985; 1987; Stasser, Taylor, & Hanna, 1989; Mesmer-Magnus & DeChurch, 2009). Fourth, similar to my previous point, individuals are more likely to trust members who vocalize information in a way that supports the information they possess. Lastly, although commonly viewed as a downside of IS openness, teams are likely to place more weight on information that is supported by other members and as a result, limit their discussion of unique information among group members. As teams place more weight on information that is openly shared, they are more apt to create a shared understanding among all members of the situation, how to approach the situation, and the coordination that should take place among members (He et al., 2007). Research has shown that communication has been linked to the development of mental models; little has focused on the type of information shared that helps teams build much cognitive architectures. As such through the repetition of information openly exchanged between teams, it is expected that a shared mental model will be developed among system members.

H6: MTS IS openness is positively related to MTS performance through MTS mental model similarity. As MTS engage in more open cross team information sharing they are likely to develop a more similar MTS mental model. The more similar team's mental models' are to other teams, the better their MTS performance.

Media Retrievability Moderator

As organizations are delving into virtual business, geographic dispersion of teams has made teams more reliant on electronic communication tools (Cramton, 2001, Gibson & Gibbs, 2006). Although electronic communication affords teams a number of benefits, such as immediate communication, collaboration across countries, and diversity of expertise and culture, virtual communication can also have its drawbacks (Gibson & Gibbs, 2006). Virtual communication can result in a misunderstanding of information due to the limited verbal and visual cues involved, logistical and technological constraints that limits informal spontaneous interaction, and hindering knowledge interpretation(DeSanctis and Monge, 1999). Over the years a number of virtual tools have been developed to assist with or daily work interactions. The evolution of these tools has provided distinct features that attempt to mitigate some of the downfalls previously noted.

Virtual communication can take the form of, but is not limited to, video conferencing, teleconferencing, email, groupware, and electronic text messaging (e.g., GChat, AIM, etc.). The primary purpose of virtual communication is to share valuable information among members in a timely manner. A number of researchers have focused on the distinct types of information relayed via communication mediums. Research suggests that distinct types of information are exchanged between members of virtual teams (Weisband, 1992). For instance, work by Hiltz, Johnson, Turoff, 1986 suggest that virtual teams tend to focus more on task-oriented communication than face-to-face teams, whereas Boardia, DiFonzo, and Chang (1999) found no difference between the two types of teams. Recent meta-analytic work on team virtuality and information sharing found that in virtual teams, IS openness (or the breadth of information shared, independent of the original distribution of that information) resulted in greater team performance than IS uniqueness (information that is unshared or distributed among system members; Mesmer-Magnus et al., 2011), whereas meta-analytic findings of face-to-face teams has concluded the opposite; IS uniqueness resulted in greater team performance than IS openness (Mesmer-Magnus & DeChurch, 2009). Based on these findings, the authors concluded next steps for team virtuality research include having a better understanding of "the extent to which different virtual tools effectively support different group processes" (Mesmer-Magnus et al., 2011).

Towards this aim, this dissertation introduces the idea of information friendly retrievable tools (i.e., media retrievability tools), the extent to which a technological tool enables the information to be retrieved later. Typically, email, shared sites, and chat messaging are high media retrievable tools, whereas voice and video are not low media retrievability tools. Retrievability represents one large advantage of more virtual, distant, less rich tools. First, information can be stored and is available when it is needed by a teammate. Second, it can be interpreted later with reflection, by ones' teammate improving comprehensiveness. Third, by virtue of its archival nature, it ought to facilitate the development of transactive memory, enabling team members to note who knows what information and how it can be retrieved, without having to fully digest the information as it is sent.

Additionally, media retrievability is likely more important to the utility of unique, as compared to open, IS. Given the different functions served by unique and open IS posited by Mesmer-Magnus and her colleagues (2011), the uniqueness of information ought to benefit from being somewhat anonymized in its delivery, and available for retrieval throughout the course of group interaction. Therefore, it is predicted that retrievability moderates the strength of the relationship between MTS IS uniqueness and MTS TMS accuracy:

H7: Communication retrievability moderates the relationship between MTS IS uniqueness and MTS TMS, such that when systems engage in more MTS IS unique via media retrievable tools, the relationship between MTS IS unique and MTS TMS will be stronger whereas the relationship will be weaker when systems engage in less exchanged of information via media retrievability tools.

Media Richness Moderator

Teams research has shown that when arriving at group decisions, teams are more inclined to spend a disproportionate amount of time engaging in IS openness (Stasser & Titus, 1985, 1987; Stasser, 2003; Mesmer-Magnus & DeChurch 2009). Part of the reason teams engage in IS openness is because members tend to discuss information that is supportive of their decision. Information that refutes an initial decision is discarded because individual dislike it.

Additionally, more weight is placed on information that many people can corroborate. As such, teams that engage in IS openness can benefit from the aforementioned repetition in information being discussed. As all members openly share information, they are able to develop shared mental schemas of the situation. The repetition of information provides teams the ability to develop a shared schema of the situation.

One of the most effective ways to share information in a timely manner is through communication media characterized as rich, carrying a wide range of visual and auditory information. These forms of communication provide higher value of the information being conveyed. Medium high in richness provide individuals communicating through them the ability to engage in conversation as if they were in a face-to-face conversation these forms of media provides individuals the ability to read body language, pick up on tone inflection, and interpret silence better than less rich media, such as emails, message boards, and text messages. This feature ought to be particularly important for the openness of IS. When communicating information that builds relationships, demonstrates agreement with information, or allows members to reframe and modify information. For this reason, it is expected that the strength of the relationship between IS openness and shared mental models will be moderated by media richness:

H8: Media richness moderates the relationship between MTS IS openness and MTSSMM, such that when systems engage in MTS IS openness using more rich media (e.g., video communication), SMMs will be more similar whereas the relationship will be weaker when exchange occurs through less rich media (e.g., text messaging).

CHAPTER TWO: METHOD

Participants

The sample consisted of 328undergraduate psychology students from a large southeastern university participated in this study in exchange for research credit, extra credit, or $40. Of the 328 participants, 54% were female and 46% were male. The ethnicity of the sample included 60% Caucasian, 11% African American, 17% Hispanic, 5% Pacific Islander, 5% Asian, and 2% Middle Eastern. Ages ranged from 17 to 38. Approximately 87% of participants were 18 or 19 years of age.

The 328 participants were assigned to 82, 4-person MTS (2 2-person teams). Team assignment was kept intact throughout the duration of the study. At no point in time did the entire MTS come together or interact face-to-face. As all hypotheses specified relationships at the MTS level of analysis, the effective sample size was 82. This sample size was determined based on a power analysis which was conducted a priori in order to determine the minimum sample size needed to detect a given effect size.

Power Analysis

As defined by Cohen(1992), statistical power is influenced by three factors: sample size, alpha level, and effect size. Of these three factors, researchers have control over sample size and alpha levels (although over the years, researchers have come to the agreement that alpha levels should be within a specified range α = .01-.05). The following equation was used to calculate the sample size for this study (Cohen, Cohen, West, & Aiken, 2003).

$$n = (L/f^2) + k + 1$$

First, following the steps established by Cohen et al. (2003) an alpha level was selected; α = .05. Second, effect size = $f^2 = R^2/1\text{-}R^2$ was calculated using an effect size obtained form previous literature in the area of information sharing in virtual teams. For this study, an effect size of .46 was used based on meta-analytic work by Mesmer-Magnus and colleagues (2011). Therefore, f^2 = .21/.79 = .27. Next, L was determined by utilizing Table E.2 in Cohen et al. (2003) which is a factor of the degrees of freedom (K_B) of the hypothesized model, for this study K_B = 9, the pre-established power = .80, the pre-establishedalpha level (α = .05). Based on table E.2 (Cohen et al., 2003) the L for corresponding to these statistics was 15.65. Lastly, k = the number of variables in the study, for this study k = 9.

$$n = (15.65/.27) + 9 + 1$$

$$n = 57.96+10$$

$$n = 67.96 = 68$$

Therefore, in this study a total of68 data points were required to ensure a power of .80. With a total of 82 data points, the statistical power for testing the current hypotheses was .89. Using an electronic power calculator (Lenth, 2006) the following statistics were used to generate the power of 89: sample of 82, alpha set at .05, 8 regressors, and a R^2 of .21 (previously established by the literature.). The only exception was in the analyses testing hypotheses 6, 8, 12, 13, 15, 17, 22-24, 26, 27, 30, and 32-34. These hypotheses involved shared mental models, and due to missing data, the sample size for these analyses ranged between 49 and 70, and the statistical power for these analyses were.65 and .85. Using the same electronic power calculator (Lenth, 2006) the following statistics were used to generate the power of 65: sample of 49, alpha set at .05, 6 regressors, and a R^2 of .20 (obtained from this study). Again, using the same electronic power calculator (Lenth, 2006) the following statistics were used to generate the power of 85: sample of 70, alpha set at .05, 6 regressors, and a R^2 of .20 (obtained from this study).

Overview of the Experimental Protocol

MTS Task Environment

The SURREALISM MTS task was utilized for this research study. This task mimics an emergency management system with 3 teams, comprised of 2, 2 person live teams and 1 simulated team of 15 convoy trucks traveling through the region with medical supplies. This platform was designed based on a commercially available real-time strategy PC video game: World in Conflict (Sierra Entertainment, 2007). SURREALISM created a highly controlled 10 cell by 10 cell region in which all MTSs encountered the same enemies at the exact same locations. In order to ensure that all MTSs experienced the exact same enemies each received the same

Within the region there were three types of zones: safe zones, non-hotspot zones, and hotspot zones. The safe zones indicated that there were no enemies that would inflict damage on the convoy traveling through the region. The non-hotspot zones had enemy forces that would inflict minimal damage on the convoy. Additionally, the non-hotspot zones consisted of enemies that could be neutralized by one specific team. In other words, both teams were not necessary at that point in the map in order to neutralize the enemies found within that region. The hotspots zones were considered the most dangerous spots within the region. The enemies within this area would inflict the most damage on the convoy units traveling through the region. These hotspot areas were designed in order to promote cross team coordination because in addition to exchanging information about the enemies in the region, both teams were necessary in order to neutralize the enemies within a hotspot zone prior to having the convoy travel through it safely.

Intelligence about the entire 100 cell region was dispersed among all four members of the MTS. The MTS had all the information to determine which regions within the map were safe, non-hotspot, or hotspot zones. To successfully identify these zones, MTS members had to share information both within and across teams. Intelligence was distributed to MTSs prior to the beginning of each mission.

Performance Episodes

Each MTS completed two missions during which performance was assessed. Mission 1 lasted 30 minutes and served as a practice task. Mission 2 lasted 60 minutes and was used for all data collection. Each mission was designed to unfold as Marks et al. (2001) noted, where episodes are comprised of both transition (or planning) phases and action (or playing) phases. At the beginning of the practice and performance missions, the MTS had 10 minutes to plan followed by time to execute their plan. During the practice mission the action phase consisted of 20 minutes, whereas during the actual performance mission, the action phasewas split into two sessions, one 35 minute session and one 25 minute session.

Playing Environment

For both the performance episodes each participant sat an individual workstation outfitted with a networked pc, microphone-equipped headset, and 2 displays. One display provided the game interface and the other served as the communication console where Skype was displayed. In the interface console, students were presented with a 10 cell by 10 cell map of the Kazbar region. Within the console, the intended functions are to a) move around the map in an effort to identify enemy threats and hotspots based on intelligence reports received by command, b) zone areas as hotspots, based on a participants rules of engagement, c) neutralize enemy threats located within identified hotspots, and d) order the convoy of troops carrying humanitarian aid to war-torn troops to move through the region once it has been cleared of all potential threats. In order to complete these tasks, participants coordinated their action via the communication console.

The communication console consists of the Skype version 5.3 (Skype Premium, 2012), with group video. Within this console each participant had the ability to see all members of the taskforce in his or her contact list along the left hand side of the interface. Through the Skype interface, participants had the option of engaging in chat conversations, audio conversations, and video conversations with every member of the taskforce during both the transition (i.e., planning) and action (i.e., playing) phases of the task. This version of Skype was selected because it provided the taskforce members the option to partake in a group video conversation, allowing multiple members to be involved in a video conference call. In conjunction with the Skype software, the Pamela software (Pamela, 2012) was used to record all Skype interactions for later coding. In order to ensure that all participants had the knowledge to successfully perform the task, each was trained on their individual roles, the game, and the communication console.

Training

The training portion of the study was conducted in two adjacent training rooms. Each training room had a high performing PC and a 28-inch monitor at the end of a conference table. MTSs in the current study included two 2-person component teams, the Phantom team and the Stinger team. Each component team was situated in one of these two training rooms and did not interact face-to-face during the training.The training setupallowed for both team members to be trained simultaneously by a research assistant. At the end of each training session, the participants were given a training check questionnaire to ensure that they understood their role and the task. Answers to the training check questionnaire were reviewed as a group and any questions answered incorrectly were explained to participants. Upon completion of the training participants were taken to their work stations and asked to engage in a practice session. Participants were notified that they were engaging in a practice session and they were encouraged to ask the experimenter questions if there was any confusion about their role, the task, or the communication console.

Networking the Task

In order for all four MTS members to be linked, this task required the use of a control room that included two high performance PCs to allow the experiment to network team members on the same domain, collect real-time data for each participant, team and MTS. Participant stations were equipped with a high performance PCs, two 21-inch widescreen monitors, noise reducing headsets, and webcams. A total of 7 networked high performing PC computers and 11 28-inch monitors, 4 noise reducing headsets, and 4 webcams were required for this experimentation.

MTS Structure

MTS Goal Hierarchy

SURREALISM was selected for this study because it provided designed to create a task that incorporates the key aspects of MTS theory, where team members are interdependent with respect to a team level goal, and where two teams are interdependent with respect to a system-level goal. The goals of the mission are broken down by level in Figure 2. First at the lowest level, along the bottom of Figure 2, the team level, team members on the Phantom team were required to plot intelligence and neutralize counter insurgency enemies, such as insurgent threats. The members on the Stinger team were required to plot intelligence and neutralize ordinance disposal enemies, such as improvised explosive devices (IED). At the middle level, or the team level, each team is tasked with neutralizing identified hotspot cells/areas. These cells were identified to cause the greatest damage to the convoy traveling through the region. Lastly, at the highest level, the top level of Figure 2, the system level, the taskforce’s goal is to safely move the convoy through the region while limiting the damage it received while traveling through the region.

Individual Level

The Phantom team was comprised of two members. At the individual level, the Recon Officer was tasked with a) plotting intelligence obtained from command, b) identifying hotspots based on his or her rules of engagement, and c) rezoning hotspot cell locations as red, whereas the Field Specialist was tasked with a) neutralizing insurgent hotspots identified by his or her recon officer following his or her rules of engagement and b) rezoning once designated hotspot areas as green, after they were cleared of all enemies. By working together the Phantom team would neutralize the appropriate enemies and clear the region in order for the convoy to travel through it while limiting the amount of counter insurgents that would inflict damage on the convoy.

Similarly, at the individual level, the Stinger team, like the Phantom team, was comprised of two members. The Recon Officer was tasked with a) plotting intelligence obtained from command, b) identifying hotspots based on his or her rules of engagement, and c) zoning hotspot cell locations as blue. The Field Specialist was tasked with a) neutralizing improvised explosive devices (IED) hotspots identified by his or her recon officer following his or her rules of engagement and b) rezoning once designated hotspot areas as green, once they were cleared of all enemies. By working together the Stinger team would neutralize the appropriate enemies and clear the region in order for the convoy to travel through it while limiting the amount of IEDs that would inflict damage on the convoy.

Component Team Level

At the team level, the goal was to clear the region of any enemy hotspots, specifically of IED hotspots for the Stinger team and insurgent hotspots for the Phantom team, and it was not possible for either the Stinger or Phantom team to achieve this goal without collaboration between the recon officer and the field specialist. For example the Phantom Recon Officer's task was to plot intelligence and identify areas that are potential hotspots. The Phantom Recon Officer did not have the capabilities of neutralizing any enemies in the region and had to rely on his or her Phantom Field Specialist in order to successfully attain the team's goal, of clearing the area of insurgent threats. Similarly, the Phantom Field Specialist did not have the zoning capabilities as the Phantom Recon Officer and was not able to identify cells as potential hotspot regions that must be neutralized. Therefore, the Phantom Field Specialist had to await his or her Phantom Recon Officer's zoning of regions as hotspots before engaging the enemy threats, otherwise attempting to neutralize all threats would be an inefficient use of his or her time and doing so would not allow the Phantom Field Specialist enough time to clear the region of all insurgent hotspots.

Integration of Teams

At the highest level, the multiteam system level, the goal was to move the convoy through the war-torn regions as quickly as possible while limiting the amount of damage inflicted on the convoy. In order to accomplish this goal each team had to communicate with each other acknowledging that the region was cleared of threats. Coordination between the teams on when it was safe to move the convoy was essential for the convoy to receive the last amount of damage.

Procedure

Participants reported to the laboratory and were directed into one of two team rooms. This was done to insure that the Phantom team members did not interact with the Stinger team members face-to-face prior to the study. Next participants completed demographic questionnaires. Following demographic measures, participants were given a 45 minute training session as a team, where mission objectives, as well as individual role responsibilities were reviewed. This training was delivered in person by a trained experimenter. After the training session, participants were escorted to their stations and engaged in two missions.

Mission 1 (i.e., practice mission), lasted a total of 30 minutes. Itfollowed immediately after participants were trained. Next, participants engaged in a 10 minute transition (i.e., planning) phase. Communication with all taskforce memberswas done via virtual communication (i.e., communication interface). Following the transition phase participants completed measures as indicated in Appendix A. Next participants engaged in a 20 minute action (i.e., playing) phase. At the end of the action phase, participants completed a number of measures as depicted in Appendix A.

Mission 2 (i.e., performance mission)followed immediately after Mission 1. This mission lasted a total of 60 minutes. Similar to mission 1, participants were given 10 minutes to engage in strategizing and planning for the mission. During the transition (i.e., planning) phase, participants were able to communicate with their MTS members via their choice of virtual communication (e.g., video conference call, audio conference call, or chat). Post the transition phase, participants were asked to complete a set of measures. Following measure completion, participants engaged in a 55 minute action (i.e., playing) phase. This action phase was split into two parts with measure completion in the middle. The first half of the action (i.e., playing) phase lasted 35 minutes and the second half lasted 20 minutes. At the end of the study as depicted in Appendix A, performance indices were obtained. In the following session

Measures

Appendix A provides a timeline of the study. It details the time when each of the following measures was collected throughout each session. Table 2 provides zero-order correlations for all study variables. Table 3 provides all Cronbach alphas and aggregation indices for study variables. All Cronbach alphas were analyzed and considered acceptable, with the exception of the alpha associated with the trust measure. Analyses were conducted and an alpha was calculated considering the removal of each item. Results of the analysis suggested that the highest alpha was achieved by including all scale items when aggregating to the scale level. Removal of any one item resulted in significant drop of the Cronbach alpha associated with the scale score. Therefore, all items were considered when obtaining a trust score for each participant. Next analyses were conducted to support the aggregation of individual scores to the MTS level. $R_{wg\ (j)}$indices of within-group agreement (James, Demaree, & Wolf, 1984) were calculated for each measure. This index provides a within-group estimation of agreement for each item ranging from 0-1, where higher scores indicate greater agreement between group members on a particular construct. Table 3 provides all r_{wg}statistics for the aggregation of all study variables from the individual level to the MTS level.

MTS Efficacy

Collective efficacy was measured using 5 distinct scales, all presented in Table 4. It was of interest to determine the best way to target multiteam level constructs. Therefore multiple ways of targeting this construct were included solely for this construct in order to avoid participant fatigue. The first form of multiteam efficacy consisted of a task focus efficacy. Task efficacy was measured using a 4-item scale. A sample item of the scale consists of "How far do you think your team and the other team can move the convoy in the upcoming trial?" Responses were scored on a 1-5, where 1 = *0%*, 2 = *25%*, 3 = *50%*, 4 = *75%*, and 5= *100%*. An average was calculated, where higher scores indicated greater levels of multiteam task efficacy.

The second and third multiteam efficacy measure consisted of an adapted 11-item measure based on Chen, Gully, and Eden's (2001) general self-efficacy scale. These items were adapted to refer to each member's perception of the taskforce in two distinct ways. The first consisted of refereeing to the taskforce as two distinct teams and the second consisted of referring to the taskforce as a whole (e.g., the taskforce). A sample item of the team reference multiteam efficacy scale consisted of "*My team and the other team will be able to achieve most of the goals that are set for the taskforce"* whereas a sample item of the taskforce reference consists of *"Our taskforce will be able to achieve most of the goals that are set for the taskforce*". Response were rated on a Likert-type scale where 1 = *Strongly Disagree*, 2 = *Disagree*, 3 = *Neutral*, 4 = *Agree*, and 5 = *Strongly Agree*. Scores for this scale were averaged, where higher scores indicated greater levels of multiteam efficacy.

Lastly, the fourth and fifth way of targeting multiteam efficacy, was through another task focused measure based on the Bandura (1986) task efficacy measure. This measure consisted of 8 items. A sample item of the first set of 8 questions consisted of "*I believe that our taskforce team can finish the mission in the upcoming mission*". Responses were scored as 0 = *no* and 1 = *yes*. A total was calculated for the 8 questions asked; higher scores indicated greater degrees of multiteam efficacy. A sample of the second set of questions consists of "*Based on your above answer, how certain are you?*" Participants were asked to respond by providing a percentage from 0%-100%; greater number indicated higher levels of multiteam efficacy. Each of the initial 8 Bandura questions was followed immediately by the Bandura percentage question.

MTS Trust

Trust was assessed using a 7-item scale. A sample item consists of "*The other team will keep our team in mind when performing the mission*". All items are provided in Table 5. Responses were scored on a 5 point Likert-type scale ranging from 1= *strongly disagree,* 2 = *disagree,* 3 = *neutral,* 4 = *agree,* and 5 = *strongly agree.* Please see Table 2 for all scale items. Scores were averaged where higher scores indicated greater level of multiteam trust.

MTS Information Sharing

Information sharing opennesswas measured using a 3-item measure adapted from the Bunderson and Sutcliffe (2002) measure. A sample item is *"The members of the other team worked hard to keep our team up to date on their activities."* All items are presented in Table 6. Responseswere scored on a Likert-type scale format where 1 = *very strongly disagree,* 2 =

disagree, 3 = *neither disagree or agree,* 4 = *agree,* and5 = *very strongly agree*. Responses across all three items were averaged and higher scores indicated greater levels of multiteam information sharing openness.

Information sharing uniqueness wascalculated using objective data pulled from the task. Appendix B provides an overview of how the task relevant information was distributed across all taskforce members. Scores were obtained for the unique information shared both between teams and within team. The information sharing unique between teams score consisted of the amount of information that was exchanged between players of distinct teams that was initially distributed to only one member of the taskforce. The information sharing unique within team score consisted of the amount of information that was exchanged between players of the same team that was initially distributed to only one of the two members engaging in the exchange of information.

MTS Transactive Memory Systems

The TMS measure consisted of a 10-item scale adapted from the Lewis (2003) TMS scale commonly used in the literature to assess TMS. The original scale consists of three dimensions: specialization, credibility, and coordination. For the sake of this study, only the specialization and credibility dimensions of the scale were included. Each subscale was comprised of 5 items. A sample item from the specialization scale consisted of *"I have knowledge about an aspect of the task that no other member of the taskforce has."* A sample item from the credibility scale consisted of "*I trust that task knowledge of the other members is credible*". All items are presented in Table 7. The response scale for these items followed a Likert-type scale format where 1 = *completely disagree,* 2 = *disagree,* 3 = *neutral,* 4 = *agree,* and5 = *completely agree*.

MTS Shared Mental Models

Three shared mental models were measured using the pairwise comparison approach: multiteam goal shared mental model, multiteam task shared mental model, and multiteam team shared mental model. Each shared mental model consisted of 6, 5, and 7 nodes or statements that were compared and rated. Participants were asked to review the nodes presented along the top of the measure and along the left hand side of the measure. Taking one pairing at a time, participants were asked to provide a rating on a Likert-type scale where 1 = *minimal or no relationship,* 2 = *weakly related,* 3 = *moderately related,* 4 = *somewhat strongly related,* and5 = *very strongly related* of how related the two tasks are to one another. All statements presented to participants to rate are presented in Table 8.

A similarity index was used to assess mental models. The similarity index was computed using the Quadratic Assignment Procedure (QAP) in UCINET (Borgatti, Everett, & Freeman, 1992). QAP analysis can be utilized to assess the similarity between two matrices. QAP analyses provide a correlation equivalent to a Pearson correlation which indicates the sharedness or similarity in the pattern of relationships between team members' shared mental models.

MTS Performance

A recent review of the literature (Murase et al., 2010) has shown that an overwhelming amount of team literature has placed an emphasis on team effectiveness as criteria by which to measure team performance. Table 9 provides an outline of how performance indices were conceptualized. Multiteam Effectiveness was measured using the taskforce's ability to move the convoy safely through the Kazbar region, through a predefined path, while having the least amount of damage inflicted on the convoy. It was explained to participants that the convoy would not deviate from the path previously defined and that it would only move along when ordered by one of the members of the taskforce. This predefined path was provided to participants in order to provide more control of the game environment. This provided for all taskforces to experience the same environment, the same amount of attacks on the convoy and required them to travel through the same amount of cells to get to the final destination. Multiteam effectiveness was assessed by taking into account whether taskforce members followed the rules of engagement while neutralizing the war-torn region and riding it of counter insurgents and IEDs. The rules of engagement consisted of 1) all threats in a cell were reported, 2) threat within a cell is correctly neutralized, and 3)convoy travels safely through the cell. If these rules of engagement were not followed in order then the convoy would receive damage. The greater damage received by the convoy, the more points were deducted from the taskforce's overall score at the end of the task. Although effectiveness is an important performance criterion, it is not the only means by which performance was assessed. A second criteria to measure system performance was included, multiteam efficiency.

Multiteam efficiency was an objective task derived index operationalized as the taskforce's ability to move the convoy along a predefined path in the shortest amount of time as possible. The task gave us the ability to track the time when each taskforce reached the final destination cell. All taskforces were given 55 minutes to accomplish their goal of reaching the final destination cell. At the 55 minute mark all taskforces were asked to stop. The amount of time was then recorded. A high score indicated a less efficient taskforce, whereas low score indicated a highly efficient taskforce.

Communication Medium

In contrast to much prior work on virtuality where teams are restricted to certain media and then groups of participants using one media or another are compared, this study allows participants to choose the media that they use to communicate and to change this fluidly as the task u folds. Thus, communication media includes a set of measured process variables reflecting how much time the team spent using a particular type of media.

In order to assess media retrievability, three unobtrusive measures were derived using the chat logs as recorded using the Pamela software. The first consisted of social information exchanged via media retrievability tools (i.e., chat). The second entailed task focused messages sent via media retrievability tools, and the third was an aggregate of the two that was assigned a time value. The time value consisted of the summation of the following: the amount of social messages multiplied by 4 seconds and the amount of task specific messages multiplied by 10 seconds. The selection of 4 and 10 seconds were due to the information that was being relayed across participants. Four seconds were assigned to social related messages because they mainly consisted of messages that were very short and did not require many cognitive resources, such as: want to grab food after, whereas 10 seconds were assigned to each task related message because it consisted of having participants sit read their intelligence and copy it into a chat window. A sample task related message was I8 – Humanitarian Tent (63, 361). These messages, although short, were less intuitive and required participates to continuously refer to their intelligence sheets in order to input it correctly into their chats. For each of the three measures of media retrievability, the higher the number the more messages or time spent using the media retrievability tools.

Media richness consisted of the total amount of time that media rich tools were employed. Each Pamela video and audio conference call recording was reviewed. The following was extracted from each recording: 1) amount of time per video where taskforce members were present and visual (i.e., a live feed of their interaction that showed their face) cues could be interpreted, 2) amount of time per video where taskforce members were present and only their voices could be heard (i.e., no live feed of their interaction could be seen), and 3) the total amount of individuals present for each exchange described in points 1 and 2. Next the product of steps 1 and 3 was multiplied by 1.5 and the product of steps 2 and 3 were multiplied by1, essentially staying the same. Since video conversations are viewed as more rich, the exchange that consisted of video was awarded a greater number, thus multiplied by1.5. Lastly, the scores obtained from the video and the audio calculations were summed and this summation comprised the media richness index.

Control Variables

The following variables were measured and their relations to key study variables examined to determine their utility as potential control variables. Two question pertaining to PC Video game and Video game experience as well as two question pertaining to virtual communication were asked. All questions can be found in Table 10. Table 11 portrays the correlations between each of the four potential controls and all study variables. Based on these correlations the following control variables were considered, IMing, PC video play experience and Video play experience. Further analysis were conducted to determine if PC game experience and Video game experience should be aggregated into one construct. The correlation between the two of $r = -.35$, $p<.01$ led to the aggregation of the variables into one control variable. The new aggregated variable in conjunction with the IMing variable were used in all analyses as control variables.

CHAPTER THREE: RESULTS

Overview of the Analyses Presented in the Results

The results are divided into four sections. The first section discusses the results of the analyses depicted in the Theoretical Model that was initially proposed. Figure 1 depicts the relationships tested. Tables 12-19, Models 1-36, summarize the relationships studied to test Hypotheses 1-8. The second section of the discussion includes the relationships depicted in the Follow-up Exploratory Analyses Model 1 (please see Figure 3). These relationships still shadow the pattern of relationships that were predicted in the Theoretical Model, for instance, motivational/affect emergent states predict behavioral processes, behavioral processes predict cognitive emergent states, and finally cognitive emergent states predict performance. The difference between the two models is that rather than efficacy predicting IS uniqueness, efficacy predicts IS openness. Rather than IS uniqueness predicting TMS, IS uniqueness predicts SMM. Tables 20-29, Models 37-96, summarize the relationships studied.

Based on results of the Theoretical Model and the Follow-Up Exploratory Model 1 additional exploratory analyses were conducted to look at the relationship between behavioral processes and cognitive emergent states. Table 30 summarized results of lagged correlations that were conducted to determine if behavior processes predicted cognitive emergent states or vice versa. Based on the results two subsequent sections were included in the results.

The third section of this discussion includes the relationships depicted in the Follow-up

Exploratory Model 2. Figure 4 provides a depiction of all the relationships studied. Rather than considering motivational/affective emergent states predicting behavioral processes and in turn behavioral processes predicting cognitive emergent states, and cognitive emergent states predicting performance; the relationships studied in this model focuses on motivational/affective emergent states predicting cognitive emergent states, cognitive emergent states predicting behavioral processes, and behavioral processes predicting performance. Tables 31-38, Models 97-131, summarizethe relationships studied.Lastly, the fourth section of this discussion, takes into consideration all the relationships depicted in the Follow-up Exploratory Model 3. In this model motivational/affective emergent states predict cognitive emergent states, cognitive emergent states predict behavioral processes, and behavioral processes predict performance. Figure 5 provides a depiction of all the relationship studied. Tables 39-48, Models 132-200 summarize the relationships studied.

Theoretical Model Analyses

Motivationally-Driven Development

Hypothesis 1 stated that MTS efficacy would be positively related to MTSIS uniqueness. Table 12, Models 1-10, summarize all analyses used to test this hypothesis. To test Hypothesis 1, multiple regression was employed. To test the effects of MTS efficacy on MTS IS uniqueness, MTS IS uniqueness was regressed onto the control variables, (aggregate of PC and Video game experience and IMing, explanation indicating why these variables were selected is discussed in the Method section of this document) in Step 1 and in Step 2 onto MTS efficacy. Hypothesis 1 was not supported for the dependent variable MTS IS between teams; the standardized beta (presented in Step 2 of Models 1-5) associated with MTS efficacy was not statistically significant ($\beta_{\text{MTS Task Efficacy}}$= .00, *ns*; $\beta_{\text{MTS Taskforce Efficacy (team)}}$ = .02, *ns*; $\beta_{\text{MTS Taskforce Efficacy (MTS)}}$ = .09, *ns*; $\beta_{\text{MTS Bandura Percentage}}$= .04, *ns*; and $\beta_{\text{MTS Bandura Yes/No}}$ = .12, *ns*). Hypothesis 1 was also not supported for the dependent variable MTS IS within team; the standardized beta (presented in Step 2 of Models 6-10) associated with multiteam efficacy was not statistically significant ($\beta_{\text{MTS Task Efficacy}}$= .15, *ns*; $\beta_{\text{MTS Taskforce Efficacy (team)}}$ = .15, *ns*; $\beta_{\text{MTS Taskforce Efficacy (MTS)}}$ = .10, *ns*; $\beta_{\text{MTS Bandura Percentage}}$= .11, *ns*; and $\beta_{\text{MTS Bandura Yes/No}}$ = -.02, *ns*).

Hypothesis 2 stated that MTSIS uniqueness is positively related to MTS performance, (efficiency and effectiveness). To testHypothesis 2,multiple regression analyses were employed. Table 13, Models 11-14, summarize all analyses used to test this hypothesis. In Step 1 of Models11-14, MTSperformance was regressed onto the control variables and in Step 2 onto MTS IS uniqueness. Hypothesis 2 was not supported for the dependent variable MTS efficacy; the standardized beta (presented in Step 2 of Models 11 and 12) associated with MTS IS uniqueness was not statistically significant ($\beta_{\text{MTS IS Uniqueness Between Teams}}$ = .20, p <.10; $\beta_{\text{MTS IS Uniqueness Within Team}}$ = .17, *ns*). Hypothesis 2 was supported for the dependent variable MTS effectiveness; the standardized beta (presented in Step 2 of Models 13 and 14) associated with IS uniqueness was statistically significant ($\beta_{\text{MTS IS Uniqueness Between Teams}}$ = .23, p <.05; $\beta_{\text{MTS IS Uniqueness Within Team}}$ = .22, p <.05).

To test for mediation the bootstrapping technique has been viewed as a superior approach over the traditional Baron and Kenny (1986) method. Bootstrapping affords us a number of advantages to testing mediation. For instance, bootstrapping does not restrict us to the assumption of normality, which is often a problem in small sample sizes. Additionally, bootstrapping provides us the ability to test the mediation effects in small samples providing us statistics regarding the indirect effect that allow us to determine the magnitude of indirect effects.

Based on these advantages to the bootstrapping technique for testing indirect effects in conjunction with the Preacher and Hayes (2004) method of testing for mediation was employed. The Preacher and Hayes methodology was selected because it has been viewed as a superior choice when testing for mediation hypotheses (MacKinnon, Fairchild, & Fritz, 2007; MacKinnon, Krull, & Lockwood, 2000).The Preacher and Hayes method to test for mediation allows one to test and estimate the mediated effect providing a better understanding of the magnitude of the mediator in a mediated relationship. Additionally, work by Kenny, Kashy, and Bolger (1998) suggest that for mediation to be present, the first step established by Baron and Kenny (1986) is not necessary. The Preacher and Hayes method provides us some flexibility around the strict steps presented by Baron and Kenny's.

In order to test for mediation the Preacher and Hayes (2004) SPSS Macro titled Process (Preacher & Hayes; http://www.afhayes.com/spss-sas-and-mplus-macros-and-code.html) was adapted. All mediation analysis and results are based on 1,000 bootstrap samples. This macro provides statistics for five paths (MacKinnon et al., 2007; Preacher & Hayes), four of which have been outlined by Baron and Kenny (1986). First, Path a = the relationship between the independent variable and the mediator. Second, Path b = the relationship between the mediator and the dependent variable. Third, Path c = the relationship between the independent variable and the dependent variable (also referred to as the total effect; Preacher & Hayes). Fourth, c′= can be viewed as the left over variance not explained by the mediator (also referred to as the direct path; Preacher &Hayes). Lastly, Path ab = the relationship between the independent variable and the dependent variable adjusting for the mediator (referred to as the indirect path; Preacher & Hayes, 2004). In order to show that mediation is present, Preacher and Hayes suggest that a significant indirect path must be present. For the purpose of presenting the mediation results, statistical significant for each of the following paths will be discussed: total, direct, and indirect path. In the event that the indirect path is significant and the BCa 95% confidence interval does not include zero, we have sufficient evidence for mediation (Preacher & Hayes).

Hypothesis 3 stated that MTS IS uniqueness is positively related to MTS performance (efficiency and effectiveness) through (i.e., mediated by) MTS TMS. This hypothesis was tested employing bootstrapping software following the Preacher and Hayes (2004) methodology to test for indirect effects. Table 14, Models 15-18, summarize all analyses used to test this hypothesis. Hypothesis 3 was not supported for the dependent variable MTS efficacy.

As depicted in Model 15 the total effect of MTS IS uniqueness on MTS efficiency was significant, 2.50,$p< .10$ indicating that the independent variable was related to the dependent variable. The direct effect was, 2.55,$p< .05$, and the indirect effect through the proposed mediator was -.06,*ns,* with a 95% BCa CI (bias-corrected confidence interval) of -.79 to .48 (1,000 bootstrap resamples). Because the confidence interval did include zero, it can be concluded that the relationship between IS uniqueness and MTS performance was not mediated by MTS TMS.

Model 16 depicts that the total effect of MTS IS uniqueness on MTS efficiency was 2.09,*ns*, indicating that the independent variable was notrelated to the dependent variable. The direct effect was 2.16, $p< .10$ and the indirect effect through the proposed mediator was -.07, *ns,* with a 95% BCa CI of -.94 to .51 (1,000 bootstrap resamples). Because the confidence interval did include zero, it can be concluded that the relationship between IS uniqueness and MTS performance was not mediated by MTS TMS.

Model 17 depicts that the total effect of MTS IS uniqueness on MTS efficiency was.68, $p < .05$, indicating that the independent variable was related to the dependent variable. The direct effect was .70, $p < .05$and the indirect effect through the proposed mediator was -.02,*ns,* with a 95% BCa CI of -.23 to .17 (1,000 bootstrap resamples). Because the confidence interval did include zero, it can be concluded that the relationship between IS uniqueness and MTS performance was not mediated by MTS TMS.

Model 18 depicts that the total effect of MTS IS uniqueness on MTS efficiency was.63, $p < .05$, indicating that the independent variable was related to the dependent variable. The direct effect was not significant .66, *ns* while the indirect effect through the proposed mediator was -.02, *ns,* with a 95% BCa CI of -.27 to .16 (1,000 bootstrap resamples). Because the confidence interval did include zero, it can be concluded that the relationship between IS uniqueness and MTS performance was not mediated by MTS TMS.

Affect-Driven Development

Hypothesis 4 stated that MTS trust is positively related to MTS IS openness. To test Hypothesis 4, multiple regression was employed. Table 15, Model 19, summarizes the analysis used to test this hypothesis. To test the effects of MTS trust on MTS IS openness, MTS IS openness was regressed onto the control variables, in Step 1 andin Step 2 onto MTS trust. Hypothesis 4 was supported; the standardized beta (presented in Step 2 of Model 19) associated with MTS trust was statistically significant ($\beta_{\text{MTS Trust}}$= .38, p< .01).

Hypothesis 5 stated that MTSIS openness is positively related to MTS performance (efficiency and effectiveness). Multiple regression analyses were conducted to test this hypothesis. Table 16, Models 20 and 21, summarize all analyses used to test this hypothesis. InStep 1 of Models 20 and 21, MTSperformance was regressed onto the control variables and in Step 2 onto MTS IS openness. Hypothesis 2 was supported for the dependent variable MTS efficiency; the standardized beta (presented in Step 2 of Model 20) associated with MTS IS openness was statistically significant ($\beta_{\text{MTS IS Openness}}$ = .31, p < .01). Hypothesis 2 was also supported for the dependent variable MTS effectiveness; the standardized beta (presented in Step 2 of Model 21) associated with MTS IS openness was not statistically significant ($\beta_{\text{MTS IS Openness}}$ = .35, p < .01).

Hypothesis 6 stated that MTS IS openness is positively related to MTS performance (efficiency and effectiveness) through (i.e., mediated by) MTS SMM. This hypothesis was tested employing bootstrapping software following the Preacher and Hayes (2004) methodology to test for indirect effects. Table 17, Models 22-27, summarize all analyses used to test this hypothesis. Hypothesis 6 was not supported for the dependent variable MTS efficiency.

The total effect of MTS IS openness on MTS efficiency for Model 22 was 3.71, p< .05, indicating that the independent variable was related to the dependent variable. The direct effect was 3.57, p< .05and the indirect effect through the proposed mediator (i.e., MTS Goal SMM) was .14, *ns*, with a 95% BCa CI of -.47 to 1.26 (1,000 bootstrap resamples). Because the confidence interval did include zero, it can be concluded that the relationship between IS uniqueness and MTS performance was not mediated by MTS SMM.

For Model 23 the total effect of MTS IS openness on MTS efficiency was 3.88, *p*< .01, indicating that the independent variable was related to the dependent variable. The direct effect was 3.80, *p*< .01 and the indirect effect through the proposed mediator (i.e., MTS Task SMM) was.08, *ns* with a 95% BCa CI of -1.04 to .98 (1,000 bootstrap resamples). Because the confidence interval did include zero, it can be concluded that the relationship between IS uniqueness and MTS performance was not mediated by MTS SMM.

For Model 24 the total effect of MTS IS openness on MTS efficiency was 5.07, *p*< .01, indicating that the independent variable is related to the dependent variable. The direct effect was 4.91, *p*< .01 and the indirect effect through the proposed mediator (i.e., MTS Team SMM) was.17, *ns* with a 95% BCa CI of -.22 to 2.18 (1,000 bootstrap resamples). Because the confidence interval did include zero, it can be concluded that the relationship between IS uniqueness and MTS performance was not mediated by MTS SMM.

Hypothesis 6 was not supported for the dependent variable MTS effectiveness. The total effect of MTS IS openness on MTS effectiveness for Model 25 was significant 1.14, *p*< .01, indicating that the independent variable was related to the dependent variable. The direct effect was not significant when the mediator (i.e., MTS Goal SMM) was included 1.18, *ns,* while the indirect effect through the proposed mediator was -.05, *ns* with a 95% BCa CI of -.29 to .10 (1,000 bootstrap resamples). Because the confidence interval did include zero, it can be concluded that the relationship between IS uniqueness and MTS performance was not mediated by MTS SMM.

For Model 26 the total effect of MTS IS openness on MTS effectiveness was 1.16, *p*< .01, indicating that the independent variable was related to the dependent variable. The direct effect was 1.03, $p < .01$ and the indirect effect through the proposed mediator (i.e., MTS Task SMM) was .13, *ns* with a 95% BCa CI of -.11 to .39 (1,000 bootstrap resamples). Because the confidence interval did include zero, it can be concluded that the relationship between IS uniqueness and MTS performance was not mediated by MTS SMM.

For Model 27 the total effect of MTS IS openness on MTS effectiveness was .97, $p < .05$, indicating that the independent variable was related to the dependent variable. The direct effect was.92, *ns*, and the indirect effect through the proposed mediator (i.e., MTS Team SMM) was .05, *ns* with a 95% BCa CI of -.05 to .42 (1,000 bootstrap resamples). Because the confidence interval did include zero, it can be concluded that the relationship between IS uniqueness and MTS performance was not mediated by MTS SMM.

Media Retrievability Moderator

Hypothesis 7 stated that media retrievability would moderate the relationship between MTS IS uniqueness and MTS TMS.Table 18, Models 28-33, summarize all analyses used to test this hypothesis. To test Hypothesis 7 multiple regression was employed.In Step 1 of Models 28-33, MTS TMS was regressed onto the control variables, the centered MTS IS uniqueness variable and the centered media retrievability variable, and in Step 2 onto the multiplicative interaction term (centered MTS IS uniqueness within team by the centered media retrievability task). Hypothesis 7 was supported; the standardized beta (presented in Models 31 and 33) associated with the interaction term in Step 2 were statistically significant Model 28 ($\beta_{\text{MTS IS Uniqueness Between Teams X Media Retrievability Social}} = -.08$, *ns*), Model 29 ($\beta_{\text{MTS IS Uniqueness Within Team X Media Retrievability Social}} = -.36$, *ns*), Model 30 ($\beta_{\text{MTS IS Uniqueness Between Teams X Media Retrievability Task}} = -.08$, *ns*), Model 31 ($\beta_{\text{MTS IS Uniqueness Within Team X Media Retrievability Task}}$ = -.24, $p < .05$),Model 32 ($\beta_{\text{MTS IS Uniqueness Between Team X Media Retrievability Aggregate}}$ = -.07, *ns*), and Model 33 ($\beta_{\text{MTS IS Uniqueness Within Team X Media Retrievability Aggregate}}$) = -.24, $p < .05$).

In order to determine the effect of the interaction, means were plotted. Although the interaction term in step 2 of Model 31 was found to be significant, as shown in Figure 6, the plot of the means did not depict any clear pattern between the effects of MTS IS uniqueness within team and media retrievability task specific on MTS TMS. Figure 6 suggest that regardless of unique information exchanged within teams and the amount of task specific exchanged via media retrievability tools MTS develop a moderate level of transactive memory systems. The same process was conducted to determine the effect of the interaction for Model 33. Once again, although the interaction term in step 2 of Model 33 was found to be significant, as shown in Figure 7, the plot of the means did not depict any clear pattern between the effects of MTS IS uniqueness within team and media retrievability aggregate on MTS TMS. Figure 7 suggests that regardless of the unique information exchanged within teams and the amount of both social and task relevant information exchange via media retrievability tools MTS develop a moderate level of transactive memory systems.

Media Richness Moderator

Hypothesis 8 stated media richness moderated the relationship between MTSIS openness and MTSSMM.Table 19, Models 34-36, summarize all analyses used to test this hypothesis. To test Hypothesis 8 multiple regression was employed.In Step 1 of Models 34-36, MTSSMM was regressed onto the control variables, the centered MTS ISopenness variable and the centered mediarichness variable, and in Step 2 onto the multiplicative interaction term (centered MTS ISopennesswithin team by the centered mediarichness). Hypothesis 8 was not supported; the standardized beta (presented in Models 34-36) associated with the interaction term Step 2 were not statistically significant Model 34 ($\beta_{\text{MTS IS Openness X Media Richness}} = -.26$, $p < .10$), Model 35 ($\beta_{\text{MTS IS Openness X Media Richness)}} = -.15$, *ns*), and Model 36 ($\beta_{\text{MTS IS Openness X Media Richness)}} = .06$, *ns*).

Follow-Up Exploratory Analyses Model 1

Additional analyses were conducted following the same sequence of relationships as those described in the Theoretical Model, emergent states predicting behavioral processes, which were expected to promote the development of cognitive emergent states and lastly impact MTS performance. To differentiate between the Theoretical Model and these analyses, the model has been labeled the Follow-up Exploratory Analyses Model 1 and is depicted in Figure 3. The difference between the Follow-up Exploratory Analyses Model 1 and the Theoretical Model is the expected relationship associated with the emergent state predictor and behavioral process as well as the relationships associated with the behavioral process and cognitive emergent states. Summary of the relationships analyzed can be found in Table 1.

Motivationally-Driven Development

MTS efficacy is positively related to MTS IS openness was tested employing regression. Table 20, Models 37-41, summarize all analyses used to test this relationship. In Step 1 MTS IS openness was regressed onto the control variables and in Step 2 onto MTS efficacy. Results support this relationship; the standardized beta (presented in Step 2 of Models 37-41) associated with MTS efficacy was statistically significant ($\beta_{\text{MTSTask Efficacy}} = .50$, $p < .01$; $\beta_{\text{MTS Taskforce Efficacy (team)}} = .47$, $p < .01$; $\beta_{\text{MTS Taskforce Efficacy (MTS)}} = .42$, $p < .01$; $\beta_{\text{MTS Bandura Percentage}} = .26$, $p < .05$; and $\beta_{\text{MTS Bandura Yes/No}} = .12$, *ns*).

MTS IS openness is positively related to MTS performance (efficiency and effectiveness) through (i.e., mediated by) MTS TMS was tested employing bootstrapping software following the Preacher and Hayes (2004) methodology to test for indirect effects. Table 21, Models 42 and 43, summarize all analyses used to test this relationship. In Step 1 of Models 42 and 43, MTS performance was regressed onto the control variables and IS openness and in Step 2 onto MTS TMS.

The MTS efficacy is positively related to MTS IS openness relationship was not supported for the dependent variable MTS efficiency. For Model 42 the total effect of MTS IS openness on MTS efficiency was 3.90, $p < .01$ indicating that the independent variable was related to the dependent variable. The direct effect was 3.65, $p < .01$ and the indirect effect through the proposed mediator (i.e., MTS TMS) was .24, *ns*, with a 95% BCa CI of -1.53 to 2.08 (1,000 bootstrap resamples). Because the confidence interval did include zero, it can be concluded that the relationship between IS uniqueness and MTS performance was not mediated by MTS SMM.

The MTS efficacy is positively related to MTS IS openness relationship was not supported for the dependent variable MTS effectiveness. For Model 43 the total effect of MTS IS openness on MTS effectiveness was 1.01, $p < .01$ indicating that the independent variable was related to the dependent variable. The direct effect was .79, $p < .05$ and the indirect effect through the proposed mediator (i.e., MTS TMS) was .22, *ns* with a 95% BCa CI of -.12 to .63 (1,000 bootstrap resamples). Because the confidence interval did include zero, it can be concluded that the relationship between IS uniqueness and MTS performance was not mediated by MTS TMS.

Affectively-Driven Development

MTS trust is positively related to MTS ISuniqueness was tested employing regression.Table 22, Models 44 and 45, summarize the analysis used to test this relationship. In Step 1 MTS IS uniqueness was regressed onto the control variables and in Step 2 onto MTS trust. This relationship was not supported; the standardized beta (presented in Step 2 of Modes 44 and 45) associated with MTS IS uniqueness was not statistically significant Model 44 ($\beta_{\text{MTSIS Uniqueness Between Teams}}$= .08, *ns*) and Model 45 ($\beta_{\text{MTSIS Uniqueness Within Teams}}$= .06, *ns*).

MTS IS uniqueness is positively related to MTS performance (efficiency and effectiveness) through (i.e., mediated by) MTS SMM was tested employing bootstrapping software following the Preacher and Hayes (2004) methodology to test for indirect effects. Table 23, Models 46-57, summarize the analysis used to test this relationship. The MTS IS uniqueness is positively related to MTS performance through MTS SMM was not supported for the dependent variable MTS efficiency.

For Model 46 the total effect of MTS IS uniqueness between teams on MTS efficiency was 2.89, $p < .05$ indicating that the independent variable was related to the dependent variable. The direct effect was 2.82, $p < .05$ and the indirect effect through the proposed mediator was .07, *ns* with a 95% BCa CI of -.20 to 1.13 (1,000 bootstrap resamples). Because the confidence interval did include zero, it can be concluded that the relationship between IS uniqueness and MTS performance was not mediated by MTS SMM.

For Model 47 the total effect of MTS IS uniqueness within team on MTS efficiency was 1.85, *ns*indicating that the independent variable was not related to the dependent variable. The direct effect was 1.91, *ns*and the indirect effect through the proposed mediator (i.e., MTS Goal SMM) was -.06, *ns*with a 95% BCa CI of -.94 to .30 (1,000 bootstrap resamples). Because the confidence interval did include zero, it can be concluded that the relationship between IS uniqueness and MTS performance was not mediated by MTS SMM.

For Model 48 the total effect of MTS IS uniqueness between teams on MTS efficiency was 3.20, $p < .05$indicating that the independent variable was related to the dependent variable. The direct effect was 2.98, $p < .05$and the indirect effect through the proposed mediator (i.e., MTS Task SMM) was .22, *ns*with a 95% BCa CI of -.40 to 1.42 (1,000 bootstrap resamples). Because the confidence interval did include zero, it can be concluded that the relationship between IS uniqueness and MTS performance was not mediated by MTS SMM.

For Model 49 the total effect of MTS IS uniqueness within team on MTS efficiency was 2.99, $p < .05$ indicating that the independent variable was related to the dependent variable. The direct effect was 2.79, $p < .10$ and the indirect effect through the proposed mediator (i.e., MTS Task SMM) was .25, *ns* with a 95% BCa CI of -.21 to 1.43 (1,000 bootstrap resamples). Because the confidence interval did include zero, it can be concluded that the relationship between IS uniqueness and MTS performance was not mediated by MTS SMM.

For Model 50 the total effect of MTS IS uniqueness between teams on MTS efficiency was 3.26, $p < .05$indicating that the independent variable was related to the dependent variable. The direct effect was 3.33, *ns*and the indirect effect through the proposed mediator (i.e., MTS Team SMM) was -.09, *ns*with a 95% BCa CI of -1.26 to .33 (1,000 bootstrap resamples).

Because the confidence interval did include zero, it can be concluded that the relationship between IS uniqueness and MTS performance was not mediated by MTS SMM.

For Model 51 the total effect of MTS IS uniqueness within team on MTS efficiency was 2.56, *ns*indicating that the independent variable was not related to the dependent variable. The direct effect was 2.42, *ns* and the indirect effect through the proposed mediator (i.e., MTS Team SMM) was .11, *ns* with a 95% BCa CI of -.19 to 1.72 (1,000 bootstrap resamples). Because the confidence interval did include zero, it can be concluded that the relationship between IS uniqueness and MTS performance was not mediated by MTS SMM.

For Model 52 the total effect of MTS IS uniqueness between teams on MTS effectiveness was .77, $p < .05$ indicating that the independent variable was related to the dependent variable. The direct effect was .76, $p < .05$ and the indirect effect through the proposed mediator was .00, *ns* with a 95% BCa CI of -.09 to .19 (1,000 bootstrap resamples). Because the confidence interval did include zero, it can be concluded that the relationship between IS uniqueness and MTS performance was not mediated by MTS SMM.

For Model 53 the total effect of MTS IS uniqueness within team on MTS effectiveness was .56, *ns* indicating that the independent variable was not related to the dependent variable. The direct effect was .00, *ns* and the indirect effect through the proposed mediator (i.e., MTS Goal SMM) was .00, *ns* with a 95% BCa CI of -.06 to .12 (1,000 bootstrap resamples). Because the confidence interval did include zero, it can be concluded that the relationship between IS uniqueness and MTS performance was not mediated by MTS SMM.

For Model 54 the total effect of MTS IS uniqueness between teams on MTS effectiveness was .93, *ns*indicating that the independent variable was not related to the dependent variable.

The direct effect was .79, *ns* and the indirect effect through the proposed mediator (i.e., MTS Task SMM) was .14, *ns* with a 95% BCa CI of -.01 to .49 (1,000 bootstrap resamples). Because the confidence interval did include zero, it can be concluded that the relationship between IS uniqueness and MTS performance was not mediated by MTS SMM.

For Model 55 the total effect of MTS IS uniqueness within team on MTS effectiveness was .95, $p < .01$ indicating that the independent variable was related to the dependent variable. The direct effect was .84, $p < .05$ and the indirect effect through the proposed mediator (i.e., MTS Task SMM) was .13, *ns* with a 95% BCa CI of -.01 to .43 (1,000 bootstrap resamples). Because the confidence interval did include zero, it can be concluded that the relationship between IS uniqueness and MTS performance was not mediated by MTS SMM.

For Model 56 the total effect of MTS IS uniqueness between teams on MTS effectiveness was .71, $p < .05$ indicating that the independent variable was related to the dependent variable. The direct effect was insignificant when the mediator was .73, $p < .05$ and the indirect effect through the proposed mediator (i.e., MTS Team SMM) was -.02, *ns* with a 95% BCa CI of -.25 to .09 (1,000 bootstrap resamples). Because the confidence interval did include zero, it can be concluded that the relationship between IS uniqueness and MTS performance was not mediated by MTS SMM.

For Model 57 the total effect of MTS IS uniqueness within team on MTS effectiveness was .55, *ns*indicating that the independent variable was not related to the dependent variable. The direct effect was .51, *ns* and the indirect effect through the proposed mediator (i.e., MTS Team SMM) was .03, *ns* with a 95% BCa CI of -.05 to .34 (1,000 bootstrap resamples). Because the confidence interval did include zero, it can be concluded that the relationship between IS uniqueness and MTS performance was not mediated by MTS SMM.

Media Retrievability Moderator

Media retrievability moderates the relationship betweenMTSIS uniqueness between teams and MTSSMM was tested employing hierarchical regression. To test this relationship, multiple regression was employed.Table 24, Models 58-75, summarize the analysis used to test this relationship. In Step 1 of Models 58-75, MTSSMM was regressed onto the control variables, the centered MTS IS uniqueness variable and the centered media retrievability variable, and in Step 2 onto the multiplicative interaction term (centered multiteam IS uniqueness within team by the centered media retrievability task). The media retrievability moderates the relationship between MTS IS uniqueness and MTS SMMrelationship was not supported for the dependent variable MTS Goal SMM; the standardized beta (presented in Models 58-63) associated with the interaction term in Step 2 were not statistically significant:for Model 58 ($\beta_{\text{MTS IS Uniqueness Between Teams X Media Retrievability Social}}$ = .15, *ns*), for Model 59 ($\beta_{\text{MTS IS Uniqueness Within Team X Media Retrievability Social}}$ = .11, *ns*), for Model 60 ($\beta_{\text{MTS IS Uniqueness Between Teams X Media Retrievability Task}}$ = .03, *ns*), for Model 61 ($\beta_{\text{MTS IS Uniqueness Within Team X Media Retrievability Task}}$ = -.13,*ns*), for Model 62 ($\beta_{\text{MTS IS Uniqueness Between Team X Media Retrievability Aggregate}}$ = .01, *ns*), and for Model 63 ($\beta_{\text{MTS IS Uniqueness Within Team X Media Retrievability Aggregate}}$= -.18, *ns*). The media retrievability moderates the relationship between MTS IS uniqueness and MTS SMMrelationship was not supported for the dependent variable MTS Task SMM; the standardized beta (presented in Models 64-69) associated with the interaction term in Step 2 were not statistically significant: Model 64 ($\beta_{\text{MTS IS Uniqueness Between Teams X Media Retrievability}}$

$_{\text{Social}}$ = -.12, *ns*), for Model 65 ($\beta_{\text{MTS IS Uniqueness Within Team X Media Retrievability Social}}$ = -.26, *ns*), for Model 66 ($\beta_{\text{MTS IS Uniqueness Between Teams X Media Retrievability Task}}$ = -.31, $p < .01$), for Model 67 ($\beta_{\text{MTS IS Uniqueness Within Team X Media Retrievability Task}}$ = -.38, $p < .01$), for Model 68 ($\beta_{\text{MTS IS Uniqueness Between Team X Media Retrievability Aggregate}}$ = -.35, $p < .01$), and for Model 69 ($\beta_{\text{MTS IS Uniqueness Within Team X Media Retrievability Aggregate)}}$ = -.37, $p < .01$). The media retrievability moderates the relationship between MTS IS uniqueness and MTS SMMrelationship was not supported for the dependent variable MTS Team SMM; the standardized beta (presented in Models 70-75) associated with the interaction term in Step 2 were not statistically significant: for Model 70 ($\beta_{\text{MTS IS Uniqueness Between Teams X Media Retrievability Social}}$ = .12, *ns*), for Model 71 ($\beta_{\text{MTS IS Uniqueness Within Team X Media Retrievability Social}}$ = -.14, *ns*), for Model 72 ($\beta_{\text{MTS IS Uniqueness Between Teams X Media Retrievability Task}}$ = .01, *ns*), for Model 73 ($\beta_{\text{MTS IS Uniqueness Within Team X Media Retrievability Task}}$ = .03, *ns*), for Model 74 ($\beta_{\text{MTS IS Uniqueness Between Team X Media Retrievability Aggregate}}$ = -.01, *ns*), and for Model 75 ($\beta_{\text{MTS IS Uniqueness Within Team X Media Retrievability Aggregate)}}$ = .01, *ns*).

In order to determine the effect of the interaction in Model 66, means were plotted. Although the interaction term in step 2 of Model 66 was found to be significant, as shown in Figure 8, the plot of the means did not depict any clear pattern between the effects of multiteam information sharing uniqueness between teams and media retrievability task specific on multiteam task SMM. The plot depicted the lines to be parallel. Figure 8 suggests that regardless of the unique information exchanged between teams and the amount of task relevant information exchanged via media retrievability tools MTS do not develop similar MTS task SMM.

In order to determine the effect of the interaction in Model 67, means were plotted. Although the interaction term in step 2 of Model 67 was found to be significant, as shown in

Figure 9, the plot of the means did not depict any clear pattern between the effects of multiteam information sharing uniqueness within team and media retrievability task on multiteam task SMM. The plot depicted the lines to be parallel. Figure 9 suggests that regardless of the unique information exchanged within team and the amount of task relevant information exchange via media retrievability tools MTS develop do not develop similar SMM.

In order to determine the effect of the interaction in Model 68, means were plotted. Although the interaction term in step 2 of Model 68 was found to be significant, as shown in Figure 10, the plot of the means did not depict any clear pattern between the effects of multiteam information sharing uniqueness between teams within team and media retrievability social and task aggregate on multiteam task SMM. The plot depicted the lines to be parallel. Figure 10 suggests that regardless of the unique information exchanged between teams and the amount of task relevant information exchange via media retrievability tools MTS do not develop a MTS TMS.

In order to determine the effect of the interaction in Model 69, means were plotted. Although the interaction term in step 2 of Model 69 was found to be significant, as shown in Figure 11, the plot of the means did not depict any clear pattern between the effects of multiteam information sharing uniqueness within team and media retrievability social and task aggregate on multiteam task SMM. The plot depicted the lines to be parallel. Figure 11 suggests that regardless of the unique information exchanged within team and the amount of both social and task relevant information exchange via media retrievability tools MTS do not develop similar MTS task SMM.

Media retrievability moderates the relationship between MTS IS openness and MTS

TMSwas tested employing hierarchical regression. Table 25, Models 76-78, summarize the analysis used to test this relationship. In Step 1 of Models 76-78, MTS TMS was regressed onto the control variables, the centered MTS IS openness variable and the centered media retrievability variable and in Step 2 onto the multiplicative interaction term (centered MTS IS openness by centered media retrievability). The media retrievability moderates the relationship between MTS IS openness and MTS TMSrelationship was not supported; the standardized beta (presented in Models 76-78) associated with the interaction term in Step 2 were not statistically significant; for Model 76 ($\beta_{\text{MTS IS Openness X Media Retrievability Social}}$ = -.16, *ns*), for Model 77 ($\beta_{\text{MTS IS Openness X Media Retrievability Task}}$ = .06, *ns*), and for Model 78 ($\beta_{\text{MTS IS Openness X Media Retrievability Aggregate}}$ = .08, *ns*).

Media retrievability moderates the relationship between MTS IS opennessand MTSSMM. Table 26, Models 79-87, summarize the analysis used to test this relationship. In Step 1 of Models 79-87, MTSSMM similarity was regressed onto the control variables, the centered MTS IS openness and the centered media retrievability variable and in Step 2 onto the multiplicative interaction term (centered MT S IS openness by centered media retrievability). The media retrievability moderates the relationship between MTS IS openness and MTS SMMrelationship was not supported for the dependent variable MTS Goal SMM; the standardized beta (presented in Models 79-87) associated with the interaction term in Step 2 were statistically significant: Model 79 ($\beta_{\text{MTS IS Openness X Media Retrievability Social}}$ = .26, *ns*), for Model 80 ($\beta_{\text{MTS IS Openness X Media Retrievability Task}}$ = .19, *ns*), and for Model 81 ($\beta_{\text{MTS IS Openness X Media Retrievability Aggregate)}}$ = .18, *ns*). Media retrievability moderates the relationship between MTS IS openness and MTS SMMrelationship was not supported for the dependent variable MTS Task SMM; the standardized beta (presented in Models 82-84) associated with the interaction term in Step 2 were statistically significant: Model 82 ($\beta_{\text{MTS IS Openness X Media Retrievability Social}}$ = .10, *ns*), for Model 83 ($\beta_{\text{MTS IS Openness X Media Retrievability Task}}$ = -.08, *ns*), and for Model 84 ($\beta_{\text{MTS IS Openness X Media Retrievability Aggregate)}}$ = -.07, *ns*). Media retrievability moderates the relationship between MTS IS openness and MTS SMMrelationship was not supported for the dependent variable MTS Team SMM; the standardized beta (presented in Models 85-87) associated with the interaction term in Step 2 were statistically significant:for Model 85 ($\beta_{\text{MTS IS Openness X Media Retrievability Social}}$ = -.14, *ns*), for Model 86 ($\beta_{\text{MTS IS Openness X Media Retrievability Task}}$ = -.09, *ns*), and for Model 87 ($\beta_{\text{MTS IS Openness X Media Retrievability Aggregate)}}$ = -.13, *ns*).

Media Richness Moderator

Media richness moderates the relationship between MTSIS openness and MTS TMSwas tested employing hierarchical regression. Table 27, Model 88,summarizes the analysis used to test this relationship. In Step 1 of Model 88, MTS TMS was regressed onto the controls, the centeredMTS IS openness and centered media richness and in Step 2 onto the multiplicative interaction term (centered MTS IS openness by centered media richness).Media richness moderates the relationship between MTS IS openness and MTS TMS relationship was not supported; the standardized beta (presented in Models 88) associated with the interaction term in Step 2 was not statistically significant ($\beta_{\text{MTS IS Openness X Media Richness}}$ = .03, *ns*).

Media richness moderates the relationship between MTS IS uniqueness and MTSSMMwas tested employing hierarchical regression. Table 28, Models 89-94, summarize the analysis used to test this relationship.In Step 1, MTSSMM was regressed onto the control variables, the centered MTS IS uniqueness and centered media richness and in Step 2 onto the multiplicative interaction term (centered MTS IS uniqueness by centered media richness). Media richness moderates the relationship between MTS IS uniqueness and MTS SMMrelationship was not supported for the dependent variable MTS Goal SMM; the standardized beta (presented in Models 89 and 90) associated with the interaction term in Step 2 were not statistically significant: for Model 89 ($\beta_{\text{MTS IS Uniqueness Between Teams X Media Richness}}$ = -.10, *ns*) and for Model 90 ($\beta_{\text{MTS IS Uniqueness Within Team X Media Richness}}$= -.04, *ns*). Media richness moderates the relationship between MTS IS uniqueness and MTS SMMrelationship was not supported for the dependent variable MTS Task SMM; the standardized beta (presented in Models 91 and 92) associated with the interaction term in Step 2 were not statistically significant: for Model 91 ($\beta_{\text{MTS IS Uniqueness Between Teams X Media Richness}}$ = .11, *ns*) and for Model 92 ($\beta_{\text{MTS IS Uniqueness Within Team X Media Richness}}$ = .06, *ns*). Media richness moderates the relationship between MTS IS uniqueness and MTS SMM relationship was not supported for the dependent variable MTS Team SMM; the standardized beta (presented in Models 93 and 94) associated with the interaction term in Step 2 were not statistically significant: for Model 93 ($\beta_{\text{MTS IS Uniqueness Between Teams X Media Richness}}$ = -.12, *ns*) and for Model 94 ($\beta_{\text{MTS IS Uniqueness Within Team X Media Richness}}$ = -.05, *ns*).

Media richness moderates the relationship between MTS IS uniqueness and MTS TMSwas tested employing hierarchical regression. Table 29, Models 95 and 96summarize all analyses used to test this relationship.In Step 1 of Models 95 and 96MTS TMS was regressed onto the control variables, the centered MTS IS uniqueness and centered media richness and in Step 2 onto the multiplicative interaction term (centered MTS IS uniqueness by centered media richness). Media richness moderates the relationship between MTS IS uniqueness and MTS TMSrelationship was not supported; the standardized beta (presented in Models 95 and 96) associated with the interaction term in Step 2 were not statistically significant Model 95 ($\beta_{\text{MTS IS Uniqueness Between Teams X Media Richness}}$ = -.10, *ns*) and for Model 96 ($\beta_{\text{MTS IS Uniqueness Within Team X Media Richness}}$ = -.14, *ns*).

Follow-Up Exploratory Analyses Model 2

In the previous two sections of the results a number of meditational analyses were conducted testing the effects of MTS behavior (i.e., MTS IS) on MTS performance through MTS cognition (MTS TMS and MTS SMM). These analyses yielded results that indicating that MTS cognition was not a mediator of the MTS behavior and MTS performance relationships. Results led to the conclusion that both MTS behavior and MTS cognition are predictors of MTS performance. Based on these findings subsequent analyses were conducted to explore the MTS behavior and MTS cognition relationship. Lagged correlations analyses were conducted and reported in Table 30. The correlations take into account MTS behavior at Time 1 and look at its relationship on MTS cognition at Time 2, similarly, lagged correlations were calculated for MTS cognition at Time 2 and look at its relationship on MTS behavior at Time 3.

Analyses suggest that distinct relationships exist between the MTS IS and MTS cognition variables. The strength of the 8 relationships were assessed. Strength was interpreted as inferring causality between study constructsthat were collected at distinct points in time during the tenure of each MTS. Correlational analysis focusing on MTS IS at Time 1 predicting MTS cognition at Time 2 suggest that out of the 8 correlations 1correlation was stronger, whereas

7correlations were stronger when focusing on the MTS cognition at Time 2 predicting MTS IS at Time 3 relationship.These results were encouraging in taking an alternative view of the dynamics that play out between MTS cognitive emergent states and behavioral processes. For this reason the relationships previously established in both the Theoretical Model and the Exploratory Model were adapted to reflect the effects of MTS cognition on MTS behavior. Figures 4 and 5 portray these relationships, where MTS motivational/affective emergent states predicted MTS cognitive emergent states and MTS cognitive emergent states predict MTS behavioral processes.

Motivationally-Driven Development

MTS efficacy is positively related to MTS TMSwas tested employing regression. Table 31, Models 91-101, depict all analyses analyzed to test this relationship. In Step 1, MTS TMS was regressed onto the control variables, and in Step 2 ontoMTS efficacy. MTS efficacy is positively related to MTS TMS relationship was supported; the standardized beta (presented in Step 2 of Models 97-101) associated with MTS efficacy were statistically significant ($\beta_{\text{MTS Task Efficacy}} = .51$, $p < .01$; $\beta_{\text{MTS Taskforce Efficacy (team)}} = .46$, $p < .01$; $\beta_{\text{MTS Taskforce Efficacy (MTS)}} = .43$, $p < .01$; $\beta_{\text{MTS Bandura Percentage}} = .38$, $p < .01$; and $\beta_{\text{MTS Bandura Yes/No}} = .01$, *ns*).

MTS TMS is positively related to MTS performance (efficiency and effectiveness) was tested employing regression. Table 32, Models 102 and 103 summarize all analyses to test this relationship. In Step 1 of Models 102 and 103, MTSperformance was regressed onto the control variables and in Step 2 onto MTSTMS. The MTS TMS is positively related to MTS performancerelationship was not supported for the dependent variable MTS efficiency; the standardized beta (presented in Step 2 of Model 102) associated with MTS TMS was not statistically significant Model 102 ($\beta_{MTS\ TMS}$= .20, $p < .10$). The MTS TMS is positively related to TMS performancerelationship was supported for the dependent variable MTS effectiveness; the standardized beta (presented in Step 2 of Model 103) associated with MTS TMS was statistically significant Model 103 ($\beta_{MTS\ TMS} = .29$, $p < .01$).

MTS TMS is positively related to MTS performance (efficiency and effectiveness) through (i.e., mediated by) MTS IS uniquenesswas tested employing bootstrapping software following the Preacher and Hayes (2004) methodology totest for indirect effects. Table 33, Models 104-107, summarize all relationships analyzed to test this hypothesis. To test for MTS performance, in Step 1 of Models 104-107, MTS efficiency was regressed onto the control variables and MTS TMS and in Step 2 onto MTS IS uniqueness.

The MTS TMS is positively related to MTS performance through MTS IS uniquenessrelationship was not supported for the dependent variable MTS efficiency. As depicted in Model 104 the total effect of MTS TMS on MTS efficiency was 2.45, $p < .10$ indicating that the independent variable was related to the dependent variable. The direct effect was 1.87, *ns* and the indirect effect through the proposed mediator was .95, *ns* with a 95% BCa CI of -.04 to 2.03 (1,000 bootstrap resamples). Because the confidence interval did include zero, it can be concluded that the relationship between MTS TMS and MTS performance was not mediated by MTS IS uniqueness between teams.

Model 105 depicts the total effect of MTS TMS on MTS efficiency was 2.45, $p < .10$ indicating that the independent variable was related to the dependent variable. The direct effect was 2.33, $p < .10$ and the indirect effect through the proposed mediator was .15, *ns* with a 95% BCa CI of -.19 to 1.11 (1,000 bootstrap resamples). Because the confidence interval did include zero, it can be concluded that the relationship between MTS TMS and MTS performance was not mediated by MTS IS Uniqueness within team.

MTS TMS is positively related to MTS performance through MT IS uniqueness was not supported for the dependent variable MTS effectiveness. As depicted in Model 106 the total effect of MTS TMS on MTS effectiveness was .83, $p < .01$ indicating that the independent variable was related to the dependent variable. The direct effect was .72, $p < .05$ and the indirect effect through the proposed mediator was .18, *ns* with a 95% BCa CI of .03 to .48 (1,000 bootstrap resamples). Although the confidence interval did not include zero, the coefficient was not statistically significant and it can be concluded that the relationship between MTS TMS and MTS performance was not mediated by MTS IS uniqueness between teams.

Model 107 depicts the total effect of MTS TMS on MTS effectiveness was .83, $p < .01$ indicating that the independent variable was related to the dependent variable. The direct effect was .80, $p < .01$ and the indirect effect through the proposed mediator was .04, *ns* with a 95% BCa CI of -.03 to .27 (1,000 bootstrap resamples). Because the confidence interval did include zero, it can be concluded that the relationship between MTS TMS and MTS performance was not mediated by MTS IS Uniqueness within team.

Affect-Driven Development

MTS trust is positively related to MTSSMM was tested employing hierarchical regression. Table 34, Models 108-110, summarize all relationships analyzed to test this hypothesis. In Step 1 of Models 108-110, MTSSMM was regressed onto the control variables and in Step 2 onto MTS trust. MTS trust is positively related to MTS SMM was not supported for the dependent variable MTS Goal SMM; the standardized beta (presented in Step 2 of Model 108) associated with MTS trust was not statistically significant ($\beta_{\text{MTS Trust}} = .16$, *ns*). MTS trust is positively related to MTS SMM was not supported for the dependent variable MTS Task SMM; the standardized beta (presented in Step 2 of Model 109) associated with MTS trust was not statistically significant ($\beta_{\text{MTS Trust}} = .10$, *ns*). MTS trust is positively related to MTS SMM was not supported for the dependent variable MTS Team SMM; the standardized beta (presented in Step 2 of Model 110) associated with MTS trust was not statistically significant ($\beta_{\text{MTS Trust}} = -.10$, *ns*).

MTSSMM is positively related to MTS performance (efficiency and effectiveness).Table 35, Models 111-116, summarize all analyses used to test this relationship. In Step 1 of Models 111-113, MTSperformance was regressed onto the control variables and in Step 2 onto MTSSMM. The MTS SMM is positively related to MTS performance relationship was not supported for the dependent variable MTS efficiency; the standardized beta (presented in Step 2 of Models 111-113) associated with MTS efficacy was not statistically significant for Model 111 ($\beta_{\text{MTSGoal SMM}}= .11$, *ns*), for Model 112 ($\beta_{\text{MTS Task SMM}} = .13$, *ns*), and for Model 113 ($\beta_{\text{MTS Team SMM}}= -.14$, *ns*).The MTS SMM is positively related to MTS performancerelationship was supported for the dependent variable MTS effectiveness; the standardized beta (presented in Step 2 of Models 114-116) associated with MTS SMM was statistically significant for one model: Model 114 ($\beta_{\text{MTS Goal SMM}}= .03$, *ns*), for Model 115 ($\beta_{\text{MTS Task SMM}} = .25$, $p< .05$), and for Model 116 ($\beta_{\text{MTS Team SMM}}= -.16$, *ns*).

MTS SMM is positively related to MTS performance (efficiency and effectiveness) through (i.e., mediated by) MTS IS openness was tested employing bootstrapping software following the Preacher and Hayes (2004) methodology to test for indirect effects. Table 36, Models 117-122, summarizes all analyses used to test this relationship. In Step 1 of Models 117-119, MTS performance was regressed onto the control variables and MTS SMM and in Step 2 onto MTS IS openness. This relationship was supported as depicted in Model 121.

The total effect of MTS Goal SMM on MTS efficiency for Model 117 was 1.39, *ns* indicating that the independent variable was not related to the dependent variable. The direct effect was .57, *ns* and the indirect effect through the proposed mediator (i.e., MTS IS openness) was .95, *ns*with a 95% BCa CI of .12 to 2.48 (1,000 bootstrap resamples). Although the confidence interval did not include zero, the coefficient was not statistically significant and it can be concluded that the relationship between MTS Goal SMM and MTS performance was not mediated by MTS IS openness.

The total effect of MTS Task SMM on MTS efficiency for Model 118 was 1.63, *ns* indicating that the independent variable was not related to the dependent variable. The direct effect was .22, *ns*and the indirect effect through the proposed mediator (i.e., MTS IS openness) was 1.34, $p < .10$ with a 95% BCa CI of .23 to 3.15 (1,000 bootstrap resamples). Although the confidence interval did not include zero, the coefficient was not statistically significant and it can be concluded that the relationship between MTS Task SMM and MTS performance was not mediated by MTS IS openness.

The total effect of MTS Team SMM on MTS efficiency for Model 119 was -1.72, *ns* indicating that the independent variable was not related to the dependent variable. The direct effect was -1.23, *ns* and the indirect effect through the proposed mediator (i.e., MTS IS openness) was -.34, *ns* with a 95% BCa CI of -2.00 to .81 (1,000 bootstrap resamples). Because the confidence interval did include zero, it can be concluded that the relationship between MTS Team SMM and MTS performance was not mediated by MTS IS openness.

The total effect of MTS Goal SMM on MTS effectiveness for Model 120 was .08, *ns* indicating that the independent variable was not related to the dependent variable. The direct effect was -.19, *ns* and the indirect effect through the proposed mediator (i.e., MTS IS openness) was .32, $p < .10$ with a 95% BCa CI of .10 to .67 (1,000 bootstrap resamples). Although the confidence interval did not include zero, the coefficient was not statistically significant and it can be concluded that the relationship between MTS Goal SMM and MTS performance was not mediated by MTS IS openness.

The total effect of MTS Task SMM on MTS effectiveness for Model 121 was.75, $p < .05$ indicating that the independent variable was related to the dependent variable. The direct effect was .36, *ns* and the indirect effect through the proposed mediator (i.e., MTS IS openness) was .36, $p < .05$ with a 95% BCa CI of .13 to .73 (1,000 bootstrap resamples). Because the confidence interval did not include zero, can be concluded that the relationship between MTS Task SMM and MTS performance was mediated by MTS IS openness.

The total effect of MTS Team SMM on MTS effectiveness for Model 122 was -.47, *ns*indicating that the independent variable was not related to the dependent variable. The direct effect was -.37, *ns* and the indirect effect through the proposed mediator (i.e., MTS IS openness) was -.06, *ns* with a 95% BCa CI of -.35 to .16 (1,000 bootstrap resamples). Because the confidence interval did include zero, it can be concluded that the relationship between MTS Team SMM and MTS performance was not mediated by MTS IS openness.

Media Retrievability Moderator

Media retrievability moderatesthe relationship between MTS TMS and MTS IS uniqueness was tested using hierarchical regression. Table 37, Models 123-128, summarize all analyses used to test this relationship. In Step 1 of Model 123-128, MTS IS uniqueness was regressed onto the control variables, the centered MTS TMS and centered media retrievability and in Step 2 onto the multiplicative interaction term (centered MTS TMS by centered media retrievability). Media retrievability moderates the relationship between MTS TMS and MTS IS uniquenessrelationship was supported for MTS IS uniqueness between teams; the standardized beta (presented in Models 123-125) associated with the interaction term in Step 2 yielded a significant beta weights for Model 123 ($\beta_{\text{MTS TMS X Media Retrievability Social}}$ = -.26, $p < .05$), for Model 124 ($\beta_{\text{MTS TMS X Media Retrievability Task}}$ = -.14, *ns*), and for Model 125 ($\beta_{\text{MTS TMS X Media Retrievability Aggregate}}$ = -.15, *ns*). Media retrievability moderates the relationship between MTS TMS and MTS IS uniqueness relationship was not supported for MTS IS uniqueness within team; the standardized beta (presented in Models 126-128) associated with the interaction term in Step 2 yielded no significant beta weights for Model 126 ($\beta_{\text{MTS IS Uniqueness Within Team X Media Retrievability Social}}$ = -.18, *ns*), for Model 127 ($\beta_{\text{MTS IS Uniqueness Within Team X Media Retrievability Task}}$ = -.17, *ns*), and Model 128 ($\beta_{\text{MTS IS Uniqueness Within Team X Media Retrievability Aggregate)}}$ = -.17, *ns*).

Figure 12 depicts the results of Model 123 and the MTS TMS and MTS performance relationship moderated by communication retrievability social specific. Although the interaction term in Model 123 suggest an interaction between MTS TMS and communication retrievability, the plot of the interaction does not portray any clear interaction between the two variables in predicting MTS IS unique between teams.

Media Richness Moderator

Media richness moderates the relationship between MTSSMM and MTS IS openness was tested employing hierarchical regression. Table 38, Models 129-131, depict all analyses to test this relationship. In Step 1 of Models 129-131, MTS IS openness was regressed onto the control variables, the centered MTSSMM and the centered media richness and in Step 2 onto the multiplicative interaction term (centered multiteam SMM by centered media richness). Media richness moderates the relationship between MTS SMM and MTS IS openness relationship was not supported; the standardized beta (presented in Models 129-131) associated with the interaction term in Step 2 for all analyses was not significant: for Model 129 ($\beta_{\text{MTS Goal SMM X Media Richness}} = -.26$, $p < .10$), for Model 130 ($\beta_{\text{MTS Task SMM X Media Richness}} = -.10$, *ns*), and for Model 131 ($\beta_{\text{MTS Team SMM X Media Richness}} = .06$, *ns*).

Follow-Up Exploratory Analyses Model 3

As noted earlier, both the Theoretical and Exploratory Models were expanded once conducting lagged correlations to look at the effects of cognition on behavior. As noted in Figure 5, take into consideration the effect that motivational/affective states have on predicting cognitive emergent states, the effect of cognitive emergent states predicting behavioral processes, and the effect of behavioral processes predicting performance are tested.

Motivationally-Driven Development

MTS efficacy is positively related to MTS SMM was tested employing hierarchical regression. Table 39, Models 132-146, summarize all analysesused to test this relationship. In Step 1 MTS SMM was regressed onto the control variables and in Step 2 onto MTS efficacy. MTS efficacy is positively related to MTS SMM relationship was supported for the dependent variable for MTS Goal SMM; a number of standardized beta (presented in Step 2 of Models 132-136) associated with MTS efficacy were significant: for Model 132 ($\beta_{\text{MTS Task Efficacy}}$= .20, $p <$ .10), for Model 133 ($\beta_{\text{MTS Taskforce Efficacy (team)}}$ = .32, $p < .05$), for Model 134 ($\beta_{\text{MTS Taskforce Efficacy (MTS)}}$ = .24, $p < .05$) for Model 135 ($\beta_{\text{MTS Bandura Percentage}}$= .16, *ns*), and for Model 136 ($\beta_{\text{MTS Bandura Yes/No}}$ = .17, *ns*). MTS efficacy is positively related to MTS SMM relationship was supported for the dependent variable for MTS Task SMM; a number of standardized beta (presented in Step 2 of Models 132-136) associated with MTS efficacy for Model 137 ($\beta_{\text{MTS Task Efficacy}}$= .11, *ns*), for Model 138 ($\beta_{\text{MTS Taskforce Efficacy (team)}}$ = -.05, *ns*), for Model 139 ($\beta_{\text{MTS Taskforce Efficacy (MTS)}}$ = -.06, *ns*) for Model 140 ($\beta_{\text{MTS Bandura Percentage}}$= -.02, *ns*), and for Model 141 ($\beta_{\text{MTS Bandura Yes/No}}$ = .03, *ns*). Lastly, MTS efficacy is positively related to MTS SMM relationship was not supported for the dependent variable for MTS Team SMM; a number of standardized beta (presented in Step 2 of Models 132-136) associated with MTS efficacy for Model 142 ($\beta_{\text{MTS Task Efficacy}}$= -.09, *ns*), for Model 143 ($\beta_{\text{MTS Taskforce Efficacy (team)}}$ = -.07, *ns*), for Model 144 ($\beta_{\text{MTS Taskforce Efficacy (MTS)}}$ = -.06, *ns*) for Model 145 ($\beta_{\text{MTS Bandura Percentage}}$= .04, *ns*), and for Model 146 ($\beta_{\text{MTS Bandura Yes/No}}$ = .21, *ns*).

Affectively-Driven Development

MTS trust is positively related to MTS TMSwas tested employing hierarchical regression. Table 40, Model 147, summarizes the analyses used to test this relationship. To test the effects of MTSTMS, in Step 1 of Model 147, MTSTMS was regressed onto the control variables and in Step 2 onto MTStrust. The MTS trust is positively related to MTS TMS relationship was supported; the standardized beta (presented in Step 2 of Model 147) associated with MTS trust was statistically significant ($\beta_{\text{MTS Trust}} = .37$, $p < .01$).

MTS TMS is positively related to MTS performance (efficiency and performance) through MTS IS openness was tested employing bootstrapping software following the Preacher and Hayes (2004) methodology to test for indirect effects. Table 41, Models 148 and 149, summarize all analyses to test this relationship. This relationship was supported as depicted in Model 148 and 149.

MTS TMS is positively related to MTS performance through MTS IS openness was supported for the dependent variable MTS efficiency. As depicted in Model 148 the total effect of MTS TMS on MTS efficiency was 2.45, *ns* indicating that the independent variable was not related to the dependent variable. The direct effect was .45, *ns* and the indirect effect through the proposed mediator was 2.11, $p < .05$ with a 95% BCa CI of .36 to 3.87 (1,000 bootstrap resamples). Because the confidence interval did not include zero, it can be concluded that the relationship between MTS TMS and MTS performance was mediated by MTS IS openness.

MTS TMS is positively related to MTS performance through MTS IS openness was supported for the dependent variable MTS effectiveness. As depicted in Model 149 the total effect of MTS TMS on MTS effectiveness was .83, $p < .01$ indicating that the independent variable was related to the dependent variable. The direct effect was .40, *ns* and the indirect effect through the proposed mediator was .46, $p < .05$ with a 95% BCa CI of .12 to .85 (1,000 bootstrap resamples). Because the confidence interval did not include zero, it can be concluded that the relationship between MTS TMS and MTS performance was mediated by MTS IS openness.

MTS SMM is positively related to MTS performance (efficiency and effectiveness) through MTS IS uniqueness was tested employing bootstrapping software following the Preacher and Hayes (2004) methodology to test for indirect effects. Table 42, Models 150-161, summarize all analyses to test this relationship. This relationship was supported as depicted in Model 151.

For Model 150 the total effect of MTS Goal SMM on MTS efficiency was 1.39, *ns*indicating that the independent variable was not related to the dependent variable. The direct effect was .92, *ns* and the indirect effect through the proposed mediator was .81, *ns* with a 95% BCa CI of -.20 to 2.43 (1,000 bootstrap resamples). Because the confidence interval did include zero, it can be concluded that the relationship between MTS Goal SMM and MTS performance was not mediated by MTS IS uniqueness between teams.

For Model 151 the total effect of MTS Goal SMM on MTS efficiency was 1.63, *ns* indicating that the independent variable was not related to the dependent variable. The direct effect was -.01, *ns* and the indirect effect through the proposed mediator was 1.65, $p < .05$ with a 95% BCa CI of .48 to 3.29 (1,000 bootstrap resamples). Although the confidence interval did not include zero, the fact that both Paths A and B were not statistically significant put into question whether it can be concluded that the relationship between MTS Goal SMM and MTS performance was mediated by MTS IS uniqueness within team.

For Model 152 the total effect of MTS Task SMM on MTS efficiency was -1.72, *ns*indicating that the independent variable was not related to the dependent variable. The direct effect was -1.87, *ns* and the indirect effect through the proposed mediator was .33, *ns* with a 95%

BCa CI of -1.20 to 2.16 (1,000 bootstrap resamples). Because the confidence interval did include zero, it can be concluded that the relationship between MTS Task SMM and MTS performance was not mediated by MTS IS uniqueness between teams.

For Model 153 the total effect of MTS Task SMM on MTS efficiency was 1.39, *ns* indicating that the independent variable was not related to the dependent variable. The direct effect was 1.31, *ns* and the indirect effect through the proposed mediator was .11, *ns* with a 95% BCa CI of -.18 to 1.16 (1,000 bootstrap resamples). Because the confidence interval did include zero, it can be concluded that the relationship between MTS Task SMM and MTS performance was not mediated by MTS IS uniqueness within team.

For Model 154 the total effect of MTS Team SMM on MTS efficiency was 1.63, *ns*indicating that the independent variable was not related to the dependent variable. The direct effect was 1.10, *ns* and the indirect effect through the proposed mediator was .52, *ns* with a 95% BCa CI of -.40 to 1.72 (1,000 bootstrap resamples). Because the confidence interval did include zero, it can be concluded that the relationship between MTS Team SMM and MTS performance was not mediated by MTS IS uniqueness between teams.

For Model 155 the total effect of MTS Team SMM on MTS efficiency was -1.72, *ns*indicating that the independent variable was not related to the dependent variable. The direct effect was -1.89, *ns* and the indirect effect through the proposed mediator was .16, *ns* with a 95% BCa CI of -.57 to 1.26 (1,000 bootstrap resamples). Because the confidence interval did include zero, it can be concluded that the relationship between MTS Team SMM and MTS performance was not mediated by MTS IS uniqueness within team.

For Model 156 the total effect of MTS Goal SMM on MTS effectiveness was .08, *ns*indicating that the independent variable was not related to the dependent variable. The direct effect was -.03, *ns* and the indirect effect through the proposed mediator was .18, *ns* with a 95% BCa CI of -.06 to .58 (1,000 bootstrap resamples). Because the confidence interval did include zero, it can be concluded that the relationship between MTS Goal SMM and MTS performance was not mediated by MTS IS uniqueness between teams.

For Model 157 the total effect of MTS Goal SMM on MTS effectiveness was .75, $p< .05$ indicating that the independent variable was related to the dependent variable. The direct effect was .39, *ns* and the indirect effect through the proposed mediator was .36, *ns*with a 95% BCa CI of .10 to .84 (1,000 bootstrap resamples). Although the confidence interval did not include zero, the coefficient was not statistically significant and it can be concluded that the relationship between MTS Goal SMM and MTS performance was not mediated by MTS IS uniqueness within team.

For Model 158 the total effect of MTS Task SMM on MTS effectiveness was -.47, *ns*indicating that the independent variable was not related to the dependent variable. The direct effect was -.49, *ns* and the indirect effect through the proposed mediator was .06, *ns* with a 95% BCa CI of -.24 to .42 (1,000 bootstrap resamples). Because the confidence interval did include zero, it can be concluded that the relationship between MTS Task SMM and MTS performance was not mediated by MTS IS uniqueness between teams.

For Model 159 the total effect of MTS Task SMM on MTS effectiveness was .08, *ns* indicating that the independent variable was not related to the dependent variable. The direct effect was .04, *ns* and the indirect effect through the proposed mediator was .05, *ns* a 95% BCa CI of -.05 to .25 (1,000 bootstrap resamples). Because the confidence interval did include zero, it can be concluded that the relationship between MTS Task SMM and MTS performance was not mediated by MTS IS uniqueness within team.

For Model 160 the total effect of MTS Team SMM on MTS effectiveness was .75, $p < .05$ indicating that the independent variable was related to the dependent variable. The direct effect was .60, *ns* and the indirect effect through the proposed mediator was .15, *ns* with a 95% BCa CI of -.03 to .55 (1,000 bootstrap resamples). Because the confidence interval did include zero, it can be concluded that the relationship between MTS Team SMM and MTS performance was not mediated by MTS IS uniqueness between teams.

For Model 161 the total effect of MTS Team SMM on MTS effectiveness was -.47, *ns*indicating that the independent variable was not related to the dependent variable. The direct effect was -.51, *ns* and the indirect effect through the proposed mediator was .04, *ns* with a 95% BCa CI of -.13 to .34 (1,000 bootstrap resamples). Because the confidence interval did include zero, it can be concluded that the relationship between MTS Team SMM and MTS performance was not mediated by MTS IS uniqueness within team.

Media Retrievability Moderator

Media retrievability moderates the relationship between MTS TMS and MTS IS opennesswas tested employing hierarchical regression. Table 43, Models 162-164, summarize all relationships analyzed to test this hypothesis. In Step 1 of Models 162-164, MTS IS openness was regressed onto the control variables, the centered MTSTMS, and centered media retrievability and in Step 2 onto the multiplicative interaction term (centered MTS TMS by the centered media retrievability).Media retrievability moderates the relationship between MTS

TMS and MTS IS openness was not supported; the standardized beta (presented in Models 162-164) associated with the interaction term in Step 2 were not statistically significant for Model 162 ($\beta_{\text{MTS TMS X Media Retrievability Social}}$ = .06, *ns*), for Model 163 ($\beta_{\text{MTS TMS X Media Retrievability Task}}$ = .01, *ns*), and for Model 164 ($\beta_{\text{MTS TMS X Media Retrievability Aggregate}}$ = .02, *ns*).

Media retrievability moderates the relationship between MTS SMM and MTS IS uniqueness was tested employing hierarchical regression. Table 44, Models 165-182, summarize all analyses used to test this relationship. In Step 1 of Models 165-182, MTS IS uniqueness was regressed onto the control variables, the centered MTStask SMM, and centered media retrievability social and in Step 2 onto the multiplicative interaction term (centered MTS ISuniqueness by the centered media retrievability social).Media retrievability moderates the relationship between MTS SMM and MTS IS uniquenessrelationship was supported for the dependent variable MTS IS between teams; onestandardized beta (presented in Models 165-173) associated with the interaction term in Step 2 were statistically significant for Model 165 ($\beta_{\text{MTS Goal SMM X Media Retrievability Social}}$ = -.11, *ns*), for Model 166 ($\beta_{\text{MTS Task SMM X Media Retrievability Social}}$ = -.20, *ns*), for Model 167 ($\beta_{\text{MTS Team SMM X Media Retrievability Social}}$ = -.01, *ns*), for Model 168 ($\beta_{\text{MTS Goal SMM X Media Retrievability Task}}$ = -.03, *ns*), for Model 169 ($\beta_{\text{MTS Task SMM X Media Retrievability Task}}$ = -.23, $p < .05$), for Model 170 ($\beta_{\text{MTS Team SMM X Media Retrievability Task}}$ = .02, *ns*),for Model 171 ($\beta_{\text{MTS Goal SMM X Media Retrievability Aggregate}}$ = -.09, *ns*), for Model 172 ($\beta_{\text{MTS Task SMM X Media Retrievability Aggregate}}$ = -.23, $p < .10$), and for Model 173 ($\beta_{\text{MTS Team SMM X Media Retrievability Aggregate}}$ = -.01, *ns*). Media retrievability moderates the relationship between MTS SMM and MTS IS uniquenessrelationship was supported for the dependent variable MTS IS within team; a number of standardized beta (presented in Models 174-182) associated with the interaction term in Step 2 were statistically significant for Model 174 ($\beta_{\text{MTS Goal SMM X Media Retrievability Social}}$ = -.01, *ns*), for Model 175 ($\beta_{\text{MTS Task SMM X Media Retrievability Social}}$ = -.20, *ns*), for Model 176 ($\beta_{\text{MTS Team SMM X Media Retrievability Social}}$ = .32, $p < .10$), for Model 177 ($\beta_{\text{MTS Goal SMM X Media Retrievability Task}}$ = -.14 *ns*), for Model 178 ($\beta_{\text{MTS Task SMM X Media Retrievability Task}}$ = -.30, $p< .05$), for Model 179 ($\beta_{\text{MTS Team SMM X Media Retrievability Task}}$ = .07, *ns*),for Model 180 ($\beta_{\text{MTS Goal SMM X Media Retrievability Aggregate}}$ = -.21, *ns*), for Model 181 ($\beta_{\text{MTS Task SMM X Media Retrievability Aggregate}}$ = -.30, $p< .05$), and for Model 182 ($\beta_{\text{MTS Team SMM X Media Retrievability Aggregate}}$ = .06, *ns*).

Figures 13-15 depict the moderated relationships for Models 169, 178, and 181. Figure 13 depicts the results of Model 169 which suggests that if members of a MTS possess a highly similar task shared mental model, they are more likely to engage in greater unique information exchanged between teams if they limit the time they use media retrievability tools to share task relevant information. In other words it appears that members use these tools more effectively because they not only limit the amount of time using them, but also share unique information via this media. In the case of MTSs where members do not share similar task mental models, component teams of a MTS are more likely to benefit from using media rich tools to share task relevant information because they will engage in more between team unique information exchange.

Figure 14 depicts the results of Model 178 and the relationship between MTS task SMM and MTS IS uniqueness within team moderated by the use of media retrievability tools to exchange task specific information. Results of the graph suggest that regardless of level of MTS task SMM; component teams share a moderate level of unique information with members of their own team when highly relying on media retrievability tools to exchange task relevant information. Results also suggest that if MTS component team members limit their use of media retrievability tools to exchange task relevant information and they do not have similar mental models they share a moderate amount of unique information with members of their own teams; whereas if members share a similar mental model then they are more likely to share more unique information with members of their own teams. In sum these findings note the importance of mental models and how they can impact the reliance of media retrievability tools to share information with members of their own teams.

Figure 15 depicts the results of model 181 and the relationship between MTS task SMM and MTS IS uniqueness within team moderated by the time MTS employee the use of media retrievability tools. Results of the graph depict similar patterns as those described above for Figure 14. If members of a MTS do share similar mental models, then the limited time they spend communicating with MTS members via media retrievability tools results in greater unique IS with members of their own team. In other words, one can potentially conclude that members are efficiently communicating unique information to members of their own component team when they posses similar mental models. When MTS members do not share a similar task SMM, the limited use of media retrievability tools reduces the amount of unique information exchanged with members of their own team, whereas the greater use of media retrievability tools encourages unique IS with members of their own team.

Media retrievability moderates the relationship between MTS SMM and MTS IS opennesswas tested employing hierarchical regression. Table 45, Models 183-191, summarize all analyses to test this relationship. In Step 1 of Models 183-191, MTS IS openness was regressed onto the control variables, the centered MTS SMM, and centered media retrievability and in Step

2 onto the multiplicative interaction term (centered MTS SMM by centered media retrievability). Media retrievability moderates the relationship between MTS SMM and MTS IS opennessrelationship was not supported; the standardized beta (presented in Models 183-191) associated with the interaction term in Step 2 were not statistically significant: for Model 183 ($\beta_{\text{MTS Goal SMM X Media Retrievability Social}}$ = .07, *ns*), for Model 184 ($\beta_{\text{MTS Task SMM X Media Retrievability Social}}$ = -.12, *ns*), for Model 185 ($\beta_{\text{MTS Team SMM X Media Retrievability Social}}$ = -.08, *ns*), for Model 186 ($\beta_{\text{MTS Goal SMM X Media Retrievability Task}}$ = .22, $p < .10$), for Model 187 ($\beta_{\text{MTS Task SMM X Media Retrievability Task}}$ = -.06, *ns*), for Model 188 ($\beta_{\text{MTS Team SMM X Media Retrievability Task}}$ = -.07, *ns*),for Model 189 ($\beta_{\text{MTS Goal SMM X Media Retrievability Aggregate}}$ = .23, *ns*), for Model 190 ($\beta_{\text{MTS Task SMM X Media Retrievability Aggregate}}$ = -.04, *ns*), and for Model 191 ($\beta_{\text{MTS Team SMM X Media Retrievability Aggregate}}$ = -.08, *ns*).

Media Richness Moderator

Media richness moderates the relationship between MTS SMM and MTS IS uniquenesswas tested employing hierarchical regression. Table 46, Models 192-197, summarize all analyses used to test this relationship. In Step 1 of Models 192-197, MTS IS uniqueness was regressed onto the control variables, the centered MTSSMM, and centered mediarichness and in Step 2 the multiplicative interaction term (centered MTSSMM by centered mediarichness).Media richness moderates the relationship between MTS SMM and MTS IS uniquenessrelationship was not supported for the dependent variable MTS IS between teams; standardized beta (presented in Models 192-194) associated with the interaction term in Step 2 were not statistically significant for Model 192 ($\beta_{\text{MTS Goal SMM X Media Richness}}$ = -.10, *ns*), for Model 193 ($\beta_{\text{MTS Task SMM X Media Richness}}$ = -.09, *ns*), and for Model 194 ($\beta_{\text{MTS Team SMM X Media Richness}}$ = .12, *ns*). Media richness moderates the relationship between MTS SMM and MTS IS uniqueness relationship was not supported for the dependent variable MTS IS within team; standardized beta (presented in Models 195-197) associated with the interaction term in Step 2 were not statistically significant for Model 195 ($\beta_{\text{MTS Goal SMM X Media Richness}}$ = .13, *ns*), for Model 196 ($\beta_{\text{MTS Task SMM X Media Richness}}$ = .03, *ns*), and for Model 197 ($\beta_{\text{MTS Team SMM X Media Richness}}$ = -.07, *ns*).

Media richness moderates the relationship between MTS TMS and MTS IS openness analyses to test this relationship. In Step 1 of Model 198, MTS IS openness was regressed onto the control variables, the centered MTSTMS, and centered mediarichness and in Step 2 onto the multiplicative interaction term (centered MTSTMS by centered mediarichness). Media richness moderates the relationship between MTS TMS and MTS IS openness relationship was not supported; standardized beta (presented in Model 198) associated with the interaction term in Step 2 was not statistically significant for Model 198 ($\beta_{\text{MTS TMS X Media Richness}}$ = -.07, *ns*).

Media richness moderates the relationship between MTS TMS and MTS IS uniqueness was tested employing hierarchical regression. Table 48, Models 199 and 200, summarize the analyses used to test this relationship. In Step 1 of Models 299 and 300, MTS IS uniqueness was regressed onto the control variables, the centered MTSTMS, and centered mediarichness and in Step 2 onto the multiplicative interaction term (centered MTSTMS by centered mediarichness). Media richness moderates the relationship between MTS TMS and MTS IS uniqueness relationship was not supported for the dependent variable MTS IS uniqueness between teams; standardized beta (presented in Model 199) associated with the interaction term in Step 2 was not statistically significant for Model 199 ($\beta_{\text{MTS TMS X Media Richness}}$ = -.11, *ns*). Media richness moderates the relationship between MTS TMS and MTS IS uniqueness relationship was not supported for the dependent variable MTS IS uniqueness within team; standardized beta (presented in Model 199) associated with the interaction term in Step 2 was not statistically significant for Model 200 ($\beta_{\text{MTS TMS X Media Richness}}$ = -.09, *ns*).

Table 1 provides a summary of all dissertation hypotheses and exploratory relationships assessed. Additionally, Table 1 outlines all tables and models associated with each hypothesis and exploratory relationship tested. Lastly Table 1 includes a brief summary of the findings and provides additional information on figures associated with each tested relationship.In addition to the synthesized information provided in Table 1, Figures 18, 19, 20, and 21 provide a graphical representation of all the relationships supported from the Theoretical and Follow-Up Exploratory Analyses Models 1, 2, and 3.

CHAPTER FOUR: DISCUSSION

MTS are a growing norm in our lives (DeChurch & Zaccaro, 2010; DeChurch & Mathieu, 2009; Zaccaro, Marks, & DeChurch, 2012). The goal of this dissertation was to shed light on enabling the effectiveness of MTS. This dissertation makes three contributions to knowledge in this area: 1)Two emergent states known to be important to teams – motivation and affect- shape the dynamics of MTS (such as the development of behavioral processes and cognitive emergent states); 2)Cognition–having a shared understanding of both where knowledge is held and how to tackle a task–is a driver of MTS performance and the exchange of information both within and across teams of a MTS, and 3) virtual communication– going beyond the traditional way research in this area is conceptualized, comparing virtual teams and face-to-face teams –distinct aspects of virtual tools (such as the ability to retrieve information at a later time) influence the type of information being shared both within and across teams of a MTS.In the following paragraphs each of these points will be discussed in further detail.

Motivational and Affective Emergent States Shaping the Dynamics in Multiteam Systems

The literature targeting the development of MTS processes has shown that MTS transition processes (Marks et al., 2005) as well as leader training emphasizing coordination can prompt both implicit and explicit coordination between teams (DeChurch & Marks, 2006). Additionally work by Davison, Hollenbeck, Barnes, Sleesman, and Ilgen, (2011)suggests that coordinated action across component teams by team boundary spanners and system level leadership positively influences MTS performance. The existing literature provides team level inputs that promote MTS level behavioral processes, but our understanding of how emotional or affective responses impact behavioral processes is limited. This dissertation opens avenues focusing on motivational and affective emergent states (e.g., efficacy and trust)that are heavily cited in teams research as proponents of team processes. It is concluded that both MTS level efficacy and MTS level trust are catalyst of both MTS IS and MTS shared cognition. Specifically, MTSefficacy was shown to predict MTSIS openness and both MTSTMS (transactive memory) and SMM (shared mental models). Similarly, MTStrust was found to predict MTSIS openness andMTSTMS.

The findings that both MTS efficacy and MTS trust promote MTS IS provides an answer to a question posited by Mesmer-Magnus and colleagues (2011) in their meta-analytic work on IS in virtual teams. The authors concluded that both IS uniqueness and openness were predictors of virtual team performance. The authors also noted that in virtual teams IS uniqueness was more common even though IS openness was found to be a stronger predictor of virtual team performance. The question that the authors left us with was; how can we promote open IS in virtual teams? Although team and MTS dynamics are not the same, one step for increasing MTS IS openness is though enhancing MTS efficacy and MTS trust. To facilitate the emergence of these states, leaders can play a pivotal role. Leaders can relay information in a timely manner, act as boundary spanners, make MTS members aware of others members past experience and success with similar tasks, and create new knowledge both within and across teams of an MTS.

The findings of MTS efficacy and MTS trust promoting MTS cognition provide us insight into the how emergent states can be critical drivers of how MTS members conceptualize and frame the problem space before them. Both emergent states explained significant variance in MTS TMS, or the understanding of where knowledge and expertise is within a MTS. The context of MTS puts at the forefront the importance of understanding TMS as a tool that enhances MTS effectiveness. When working in complex and dynamic environments, while simultaneously collaborating with a number of teams to complete a shared goal, understanding where knowledge is found and to whom critical task relevant information should be relayed are essential for the functioning of MTS. This dissertation provides support that in order to build these knowledge systems, promoting MTS efficacy and MTS trust is one step in the right direction. Continuing to build onto the shared cognition literature, the following section goes into more details about the contribution that this dissertation provides for shared cognition in multiteam systems

Shared Cognition in Multiteam Systems

Since the initial work conducted on team cognition (Wegner et al., 1985; Liang, Moreland, & Argote, 1995; Cannon-Bowers & Salas, 1997) research has accumulated noting the importance of this emergent state (Mohammed et al.,2010; DeChurch & Mesmer-Magnus, 2011; Ren & Argote, 2011; Peltokorpi, 2008). Much of the team cognition literature has focused on two distinct types of team cognition shared mental models (task, team, and equipment; Cannon-Bowers & Salas, 1997) and transactive memory (Wegner et al., 1985; Ren & Argote, 2011; Lewis, 2003; Austin, 2003). The research thus far has shown the importance of these cognitive emergent states in promoting team effectiveness (Zhang et al., 2007; Lewis, 2003; Austin, 2003).Recent reviews of the SMM and TMS literatures havenoteda thorough summary of the antecedents that promote such emergent state. For instance, Mohammed et al.'s (2010) review on SMM suggests that team composition inputs (e.g., demographics, cognitive ability, tenure/experience, organizational level similarity and educational level similarity, etc.), team level inputs (e.g., planning, reflexivity, leadership, training, etc.), and organizational contextual factors (e.g., stress, workload, novel versus routine environments, etc.)have been revealed as antecedents promoting shared mental models. Similarly work by Ren and Argote (2011) has noted that a number of team composition inputs (e.g., member demographics, member technical competence, etc.), team level inputs (e.g., task interdependence, goal interdependence, group training, shared experience, communication, technology, etc.), and organizational contextual inputs (e.g., stress and geographic distributions, etc.) predict transactive memory systems in the past.

As noted above, among all the distinct antecedents that promote the development of team SMM and TMS, our understanding of how motivational and affective emergent states shape the advancement of team and MTS cognitive structures has been a critical missing piece from our shared cognition literature. This dissertation shed light on the importance of both collective or MTS efficacy and MTS trust as key drivers that promote the development of both SMM and TMS. Additionally, I went beyond emergent states as predictors of cognition and studied the effect of behavioral processes, such as IS unique and open, as drivers of emergent cognition.

Initial hypotheses sought to uncover how distinct types of IS (open and unique) shape emergent cognition (TMS and SMM). Results suggest that the relationship was not as originally hypothesized. Alternatively, lagged correlation analyses presented suggests that shared cognition impactsIS within and between teams of the MTS. SMM research has shown that SMM is positively related to the behavioral processes such as coordination (Marks et al., 2002) and communication (Marks et al., 2000), but when we focus on the complex nature of MTS communication and IS, the relationships transcend into a more complicated relationship. In MTSmembers are not only communicating with their own teammates, but they also engage in communication across team boundaries. This dissertation provided a stepping-stone for understanding how shared schema of the task influencesIS in the context of MTS. More specifically, the findings presented here provided insight into how cognition influences the sharing of MTS IS openness and MTS IS uniqueness (within and across teams). Results showed that task SMM were predictive of the IS uniqueness both within and across teams depending on the virtual tool employed. In the subsequent section more details will be provided about the influence of virtual toolsand how the findings presented in this dissertation expand the virtual MTS literature.

Virtuality in Multiteam Systems

Over the years our organizations have experienced a surge in the use of alternative forms of virtual communication in order to fulfill daily work-related responsibilities. Virtual communication tools can be categorized as high or low onthree virtuality dimensions proposed by Kirkman and Mathieu (2005). This dissertation sought to provide insight into the effectsdistinct dimensions of the Kirkman and Mathieu taxonomy, media richness and an adapted version of informational value (for instance, the ability to go back and review materials that were discussed during a meeting) had on MTS dynamics. More specifically, this dissertation focused on the impact that these dimensions had on the development of shared cognition in teams and IS both within and across teams of a MTS. The overall pattern of results suggest that depending on the level of shared schema held by members of a MTS about the task influenced the level of IS both within and across teams of a MTSwhen media retrievability tools were employed to share task relevant information.

To be more specific, the results discussed earlier in this dissertation suggest that MTSmembers that posses similar MTS SMMare more apt to share more unique IS with members of their own component team as well as members of other component teams of the MTS. Focusing first on the impact of media retrievability tools on the shared cognition and unique information exchanged with members of other component teams. The relationship was stronger when members of the MTS limited their use of media retrievability tools to exchange task relevant information suggesting that MTS members may be effectively and efficiently using these forms of tools for communication. In the event that MTS members do not share a similar task SMM, their limited use of media retrievability tools to share task relevant information hurt the quantity to unique IS exchanged with members of other teams of the MTS. Whereas, if the MTS did not share a similar task SMM but did employee media retrievability tools more often to exchange task relevant information, they were more likely to exchange unique IS with members of other component teams.

Shifting our focus to the effects of media retrievability tools on the shared cognition and unique information exchange with members of one's team. The results suggest that similar to the findings for sharing information with members of other component teams, MTS members having a similar SMM results in more information exchanged with members of one's own teams if the amount of time employing media retrievability tools to exchange task relevant information is limited. In MTSs where members do not share similar mental models, the amount of unique IS exchanged with members of one's team is reduced.

Therefore,the relationship between MTS SMM and the unique ISexchanged, both within and between teams, is impacted by the level and the type of information conveyed via information retrievability tools. Based on these results expanding our understanding of how to foster shared cognition within MTS and how it may influence the use of virtuality tools is a critical next step for virtual MTS literature. Prior to voicing potential future research ideas for the advancement of MTS theory, it is critical to acknowledge some of the shortcomings of this study and recognize how they can be overcome.

Limitations and Potential Solutions

In every study there is room for improvement. In the following section a number of areas will be discussed that could improve this line of research and potentially pave the way for the advancement in the virtual MTS literature. A number of concerns with the current study will be addressed: distinction between teams and MTS, measurement issues, and generalizability.

Differences Between Teams and MTSs

Our ability to fully understand the interplay between emergent processes and behavioral states is the size of the component teams selected for this study. Much debate has evolved around the literature on team size. Work has shown that as team size increases available resources increase as well (Stewart, 2006). However as team size increases other aspects of teams, such as coordination and other processes may be negatively impacted (Hackman, 2002). Although the debate continues on the ideal team size, a starting point is necessary to initiate our understanding of how human processes evolve. For the purpose of this study, the Salas, Dickinson, Converse, and Tannenbaum (1992) definition of teams was adopted to define the component teams of a MTS, “a distinguishable set of two or more people who interact, dynamically, interdependently, and adaptively toward a common and valued goal/objective/mission, who have been assigned specific roles or functions to perform, and who have a limited life-span of membership (p. 4). Noting this as one of the critical shortcomings of this research, future research is highly encouraged to target this limitation and expand beyond a two-person component team to understand how the dynamics evolve at the MTS level. More recent work on MTS has already noted this limitation and as such have ventured to target this concern (Davison et al., 2011).

A more critical question is whether MTS are truly a distinct entity from teams. In other words are they more than simply a large team? To answer this question, first I draw from a theoretical standpoint. I reference the goal structure of teams and MTS to have a better understanding of how a team and MTS are distinct. In a team time devoted to a single task contributes to the overall team goal. Whether team members are pooling their resources, are sequentially contributing to a task, or are interdependently exchange task responsibilities, in the end; each member’s contributions in any of the interdependences described all lead to the same team goal. The MTS literature on the other hand has posited that a key driver of what distinguished MTS from teams is the goal hierarchy that orchestrates and guides actions at distinct levels (i.e., team and system level). For instance, in a MTS, component teams share at least one similar distal goal, but simultaneously contribute towards a unique proximal team level goal that is unique to each team. Therefore MTS component teams are faced with a dilemma of sorts. The time and resources that a component team allocates to the MTS/team goal are the time and resources that cannot be devoted to the accomplishment of the team/MTS goal. The task designed for this study was developed to mimic the MTS goal hierarchy parameters noted by Mathieu et al. (2001) and DeChurch and Mathieu (2009).

Secondly, to show the distinction between teams and MTS, I reference the findings presented in this dissertation. The findings presented in this dissertation may suggest that MTS are similar to teams. For instance, the finding presented here are similar to findings mirrored in the team literature over the last 20 years, trust (Polzer et al., 2006; Rico et al., 2009), efficacy (Gully et al., 2002; Kozlowski & Ilgen, 2006), IS (Mesmer-Magnus & DeChurch, 2009; Mesmer-Magnus et al., 2011), and cognition (Ren & Argote, 2011; Mohammed et al., 2010; DeChurch & Mesmer-Magnus, 2010) have all been found to be positive indicators of performance. A further in depth look at the effect of IS suggests that a distinction is apparent in how teams and MTS operate. For instance a recent meta-analytic review of the team IS literature notes that IS uniqueness is most critical for the success of face-to-face teams (Mesmer-Magnus & DeChurch, 2009). The findings presented in this dissertation show that IS openness is more predictive of MTS performance. In other words, regarding IS, what defines team success (IS unique) is distinct from what defines MTS success (IS open). Therefore, the breadth of information exchanged among members of component teams results in greater performance.

A number of explanations can be considered for IS open to be more predictive of performance, rather than IS unique in MTS. One potential explanation is that the means of communication that were employed throughout this task included chats and video conversations. Each means of communication can assist MTS members in understanding more about the task and the people through the distinct means. Not only can individuals with distinct personalities (more gregarious versus shy) take advantage of employing the type of tool that is more in tune with their personality and allow them to engage in greater IS, but it also provides a greater amount of information being shared seeing as distinct communication mediums can be employed simultaneously increasing the breadth of information exchanged.

Another potential explanation for this finding may be that with more IS open shared, which can include a number of topics (e.g., such as social, task, backup behavior in nature, team building, etc.), component teams of a MTS are actually developing emotional and affective bonds through their written and verbal exchanges. Therefore, the open exchange of information is acting as a social platform for MTS component team members to develop relationships with other component team members.

Lastly the findings that IS open is a driver of MTS performance, provides us an important view into how MTS operate. For the purpose of this dissertation IS unique was an objective measure, whereas IS open was a subjective measure. The finding indicating that IS open is more predictive of performance, can lead us to draw some conclusions about the culture of MTS. For instance, individuals' perceptions of the breadth of information shared among component teams of the task at hand resulted in being a driver of performance. This finding posits important implications for organizations, suggesting that perceptions of the communication culture, specifically when the free flow of communication is encouraged (e.g., task, social, backup behavior in nature, conflict resolution, etc.) can results in greater MTS performance. Therefore our understanding of how individuals perceive the communication flow within their organizations can provide insight into the behaviors they engage in and whether a MTS is likely to successfully accomplish its task.

Based on the above discussion it can be concluded that both theoretically and empirically, we can draw a distinction between teams and MTS. Although there are similarities, out ability to begin to understand MTS needs to be spurred from entities that share similar dynamics, teams. Thanks to the advancement of the team literature over the past 30 plus years, we are able to begin to uncover how MTS evolve over time and in distinct contexts. Our understanding of MTS phenomena is not as simple as it sounds. Measurement of the constructs teams researchers have posited to be critical for team success can provide to be difficult to target in MTS and is the following limitation discussed.

Measurement Issues

A second limitation targeted in this discussion will be issues that arose via with the measures selected. First issues will be discussed regarding the SMMmeasurement employed. Over the years the measurement of SMM has received wide attention. A number of methods to assess SMM have been reviewed and each has been noted to have its pros and cons (please see Mohammed et al., 2010; Rentsch et al., 2009, DeChurch & Mesmer-Magnus, 2010; Resick et al., 2010).The method put forth in this study has received mixed reviews. Among the positive views, the pairwise comparison method provides for the ability to accurately illicit individuals' perceptions as well as has been found to be more predictive of performance than other methods employed (DeChurch & Mesmer-Magnus, 2010). Negative perceptions associated with this methodology include: a)The degree of cognitive resources required to complete the measure, b) The challenge it possess on participants to comprehend the instructions of what is being asked, and c) The time it takes to complete these types of measures often fatigue participants. In order to counter these limitations the number of comparisons within teach SMM measure were reduced and the SMM measures was the first set of measures completed during measure completion sections of the study. Although these actions were taken to prevent fatigue and cognitive load, a number of participants failed to fully complete all mental model measures. In many instances, as analyses incorporating MTS SMM could not be interpreted with confidence due to the low sample included in the analyses based on missing data. Targeting this problem in future research is critical. Considering the ability to incorporate other means of mental model measurement, such as card sort, ranking, rating, etc. may be a more effective and engaging way of capturing taskforce SMM.

Along the same lines of measurement drawbacks, the scale employed to measure the trust construct was not considered a reliable measure of trust when we take into consideration the Cronbach alpha statistic of .58. This statistic is extremely low and it begs the question: was trust truly targeting? Two potential explanations can be considered in light of this low Cronbach alpha statistic. First, results may be due to the fact that the items were expected to measure trust, but did not tap all aspects of the construct. Secondly, participants may not have understood what was being asked of them with such measures. A solution to this issue would be to incorporate a distinct measure of trust whose measures have a better reliability.

Going beyond the low Cronbach alpha level of the trust measure, it is important to consider the level of analysis that questions were posited to participants. Note, this concern is not exclusive to trust, but to all motivational and affective measures, such as efficacy, cohesion, social identity, etc. Specific to this study, it could be that the trust measure targeted the trust fostered towards one's team, but the same feeling of willingness to be vulnerable to the acts of members of other component teams of the MTS may not be nurtured. If this is the case we need to be cautious of findings, because we may not be measuring how much MTS level trust truly exists. In other words we need to frame questions that provide us the ability to target the extent to which one team's perceptions of the other team's trust capture's MTS trust. Furthermore, questions should be framed so that there is an explicit statement that the focus of interest is the MTS level of trust and that in order to hone in on that level members need to take into consideration both their own team level trust and how much they trust the other team. Therefore, future MTS research should investigate how constructs measures should be framed to have a better understanding of how questions should be administered to MTS members for the advancement of MTS theory.

Design Issues

The third limitation that will be discussed has to do with the design of the current study. As social scientist we tend to rely on experimentation in order to target desired construct and study them in the laboratory where we can control for extraneous factors. As this study was a correlational study, the constructs of interest evolved naturally, which in many instances is more characteristic of the real world, but simultaneously limits our comprehensive power of such phenomena. Additionally, with correlational studies it is often difficult to assign causality due to the number of cross sectional nature of the data. In the hopes of ameliorating this issue, all study variables were measured at distinct points in time, except for the MTS cognition variables MTS IS openness variables. Although most constructs were measured at distinct points in time throughout the lifecycle of the MTS, an experimental setting that manipulates the two variables of interest (MTS efficacy and MTS trust) would be the ideal setting to determine their effects on subsequent MTS processes and emergent states. By designing experimentation around distinct levels of MTStrust and MTSefficacy, we can truly dissect the effects of each on behavioral processes and cognitive emergent states.

Along the same lines of the point noted above studying MTS under laboratory settings allows us to exercise some control similar to experimentation. This study provided the opportunity for all MTS to be compared across the same task, aiding a convoy equipped with humanitarian aid supplies across a war-torn region. Although studies such as these often put in question the generalizability of findings, our ability to study MTS in the "wild" introduces a number of limitations that set us back in fully grasping how they evolve in their natural environments. For instance when we consider MTS in the field it is very difficult to draw conclusions across MTS that vary in number of component teams and team size; that are exposed to distinct situations, environmental constraints, varying degrees of training, that have long vs. short tenure of component teams working together, etc. Although not limited to the aforementioned, these limitations provide a brief overview of how any two MTS can be substantially different. These distinctions put into question what are the true drivers of developing mechanisms and performance. As such, studying MTS in the laboratory is a solution to the overwhelming natural limitations caused by field samples. In order to compensate for these limitations, which are important to understanding how MTS function, these real world situational events are incorporated in laboratory simulations and studies. In the attempt at designing such simulations and studies to resemble real world scenarios, our ability to draw conclusions about real world MTS is enhanced.

In order to represent the real world situational factors in this study the task selected was one that represented a military action MTS. This task was designed in order to assert that the properties of a MTS were intact. By properties I include the distinct aspects of the Mathieu et al. (2001) definition: a) MTS are comprised of two or more discernable teams, b) the component teams have input, process, and/or outcome interdependence, and c) there is a shared set of distal goals across teams and unique proximal goals within teams. The task designed for this study provided for each individual member of the taskforce across teams to have responsibilities that only he/she could accomplish. Next, at the team level the goal for each team was unique and the subsequent team could not assist in the successful attainment of the other team's goal. Lastly, both teams' goals contributed to a unique MTS level goal.

Along similar lines of targeting real world MTS, another limitation of this study is the extent to which it provides a realistic tenure for MTS members to fully evolve as they would in a real world MTS. For instance, although the study lasted 240 minuets (4 hours), MTS members had only 100 minutes during which they could interact as a MTS. The commonly arising argument from this time limitation is whether 100 minutes is sufficient time for trust, efficacy, and cognitive states to thoroughly flourish as they would in natural settings or in MTS with longer time spans. In an effort to tackle this concern the study was designed with two performance episodes, one allowing participants to become acquainted with the task and software and a second where performance was measured. Additionally, all MTS were promoted to undergo planning (where goal development, task management, and task strategizing take place) and action phases (where implementing goals, coordinating action, providing backup behavior take place) to stimulate realistic episodes that take place in MTS. These distinct episodes provided MTS members the ability to review their performance during the action phases of the task and make adjustments where they thought they were necessary. The aforementioned concernsbring into question theecological validity of the current findings.

The ecological validity of these findings is a true concern of this study where two dyadic teams were selected to represent a MTS. As noted by Marks et al. 2005, smaller MTS provide a situation where greater demands are placed on members. In larger MTS, distinct processes or linking mechanisms may be more apparent and critical for the function of MTS. For instance, an MTS comprised of two teams with two-person teams will have fewer networks of communication channels that can be accessed throughout a task than a MTS comprised of 5 teams with 6-person teams. Here the possibility for open communication channels are extensively augmented and can provide for distinct patterns of communication to arise. Although it is clear and I do not intend to argue that the patterns of communication will be distinct, the finding that the type of communication, for instance IS open will be more predictive of MTS performance will likely translate to larger MTS. The reason for this argument is that IS open, in other words the breadth of information shared, suggests that there may be a social aspect intertwined with the breadth of information being shared via virtual tools that is currently not being targeted. When we think of breadth of IS, distinct types of information can be targeted: social chitchat, providing backup behavior, resolving arguments, motivational encouragement, etc. All these distinct forms of information being exchanged provide members of component teams to initiate the process of building bonds or relationships with other component team members. Therefore testing similar propositions in larger MTS, where component teams may be comprised of more than 2 individuals and the MTS are comprised of more than 2 teams we are likely to see similar findings where breadth of information is more critical for performance.

With greater number of individuals some form of communication across component teams to initiate conversation and communication between members and potentially provide a baseline for getting to know each other's strengths and weaknesses can be captured via breadth of information. Therefore, as noted by Marks et al. (2205) "the influence of size, design, and operations of different types of MTS are ripe areas for future investigation" (p. 970). More importantly, understanding what is incorporated in IS open, as noted in earlier discussions of this dissertation, targeting distinct processes via communication tools may be a fruitful avenue for future research. Furthermore, as noted by Moreland (2010) although the dyads and groups undergo a number of distinct influential situations that impact the development of phenomena, dyad research should be carefully interpreted when generalizing to group/team research. Moreland also noted that many of the phenomena that occur in groups also occur in dyads. More importantly although drawing cautionary attention to dyad and group research, Moreland did articulate "dyad research can help us understand group research" (p. 261), therefore an initial look at the development of MTS phenomena in small MTS comprised of dyad teams should be viewed as a stepping stone that will allow us to begin to understand how phenomena evolve in large scale MTS.

Another limitation that feeds into the ecological validity is the makeup of MTS and how they interact. For instance, we should consider the linking mechanisms (i.e., "mechanism that connect component teams," p.18) of MTS and howthey impact the interplay of component teams (Zaccaro et al., 2012). Let us take a step back and consider the current MTS. The component teams were essentially homogeneous in that all members were from the same age group, same educational background (psychology majors), but also the teams identities were both military in nature with similar skills at their disposal. Zaccaro et al. (2012) noted that distinct linkage attributes, such as power distinct groups within an MTS hold, impact the dynamics within a system. Within the MTS created for this study power was equally distributed to each component team. For instance both teams were equal in size and within the MTS they both possessed the same hierarchical level. Thus the constancy provided across the MTS in this study may have impacted the development of some linking mechanisms to develop in distinct ways than would likely be the case in MTS described by Mathieu et al., (2001). Mathieu and colleagues described an emergency response MTS which included two county governmental component teams and two hospital component teams (Zaccarro et al.). In this example the power distributed to the component teams would differ based on the size of each and the position each held within their organization (Zaccaro et al.). Therefore, our ability as researchers to advance the science of MTS requires us to take into consideration the distinct linking mechanisms that connect MTS component teams, such as size and power that component teams have,and understand how each plays a role in the evolving nature of emergent states and behavioral processes of a MTS.

Although a number of solutions targeting the existing limitationin this study have been provided. In the subsequent section ideas for future advancement of MTS research is provided. Researchers are encouraged to consider the following ideas when developing MTS theory and designing MTS studies.

Implications for Future Research

Two areas on which future research in MTS theory could benefit from expanding will be targeted within this section of the discussion. The first incorporates distinct aspects of a MTS, for instance, individuals within the system and the processes that develop over time. The second will include methodological factors, such as measurement of processes.

The findings from this dissertation provide a stepping-stone for a number of areas within the organizational psychology literature. First the findings provide new insight into emergent states that leaders and boundary spanners can aim to foster in virtual MTS. Recent work by Davison and Hollenbeck (2011) note that boundary spanners engage in three types of behaviors *outbound information flow* ("communications activities aimed specifically at representing the unit to outsiders, such as resource owners upon which the team is critically dependent and other external constituencies that hold power and influence over the unit" p.328); *inbound information flow* ("encompasses the set of communications activities specifically associated with informing the focal unit about the environment, both external and internal to the organization to which the unit belongs" p. 329); and *behavioral integration* which has been subdivided into three potential areas in organizational structure a) across external boundaries, b)across internal subunit boundaries and c)within internal subunits. We must consider that with exchanging information across boundaries, boundary spanners must establish some form of trust with the members he or she will engage in collaborating with as well as show those individuals that the teams with which they are going to collaborate or depend on for information are not only trust worthy but capable of successfully contributing to the task in a timely manner. Work by Davison and Hollenbeck (2011) and Davison et al. (2011) have begun to explore the impact boundary spanners have on coordinating efforts in MTS, but the impact boundary spanners can have onencouraging knowledge creation and the development of MTS efficacy and MTS trustare rich avenues for the advancement of MTS theory.

As noted in Chapter 1 of this dissertation, a number of motivational and affective states exist. Within the teams literature the following affective and motional emergent states have been linked to team performance: collective orientation, collective efficacy, team learning orientation, team cohesion, trust, team empowerment, and team goal commitment to name a few (Salas, Rosen, Burke, & Goodwin, 2009). For the sake of this dissertation collective efficacy and trust were targeted to determine the effect on behavioral processes and cognitive emergent states. Our understanding of what motivates action in MTS is essential for their effectiveness. Future research should expand the range of motivational and affective emergent states to obtain a more thorough understanding of their effect. Building onto this point, exploring other critical behavioral processes, such as understanding how MTS members learn, share and create knowledge is vital for the functioning of individuals, teams, systems, and organizations. Understanding the motives that foster such developments constitute next steps within the MTS literature.

Forthe purpose of this study MTS efficacy and MTS trust were selected based on three reasons. The first being the challenge that developing MTS efficacy and MTS trust posit in these complex network of teams. For instance, MTS are comprised of component teams that usually collaborate within team boundaries but venturing outbeyond team boundaries is essential for the success of MTS. Being able to pinpoint or at least begin to uncover what motivates this behavior, such as level of efficacy and trust is just the beginning. The second reason these two emergent states were selected was because of the challenge they create to develop in virtual contexts. Within the virtual team literature trust has been one of the more studied emergent processes commonly cited as a reason is the challenges that lack of accessibility provides(Rico et al., 2009; Cramton, 2001; Jarvenpaa & Linder, 1999; Jarvenpaa et al., 1998). Drawing a parallel to the virtual team trust literature, lack of exposure to other team's success when they are not in the geographical space or simply due to lack of exposure, as can be the case for virtual MTS, is another challenge posed to MTS in the development of MTS efficacy. Lastly, although existing research posits that emotionally driven emergent states provided are the reason why shared cognition impacts team performance, this dissertation sought to make a case for the importance of emotional and affective emergent states to be the driving mechanisms of subsequent processes.

Work by Mathieu, Rapp, Maynard and Mangos (2010) and Liu and Zang (2010) have found that affective and motivational states serve as mediators to the cognitive emergent states and performance relationship. Specifically Mathieu et al. (2010) found that team efficacy mediated the task SMM and performance relationship, whereas Liu and Zang (2010) found that team efficacy mediated the TMS and team performance relationship. Although in the current study, mediational analyses were not conducted to test the effects of shared cognition as the reason for MTS efficacy influencing MTS performance, results do suggest that MTS efficacy and trust were positively related to shared cognition. The findings presented in this study in conjunction with previous work, suggest that MTS efficacy and MTS trust are essential emergent states that should be fostered throughout the lifecycle of virtual MTS. Furthermore understanding whether MTS efficacy and MTS trust are precursors to shared cognition or the reason why shared cognition is predictive of performance are avenues that should be explored in the future.

Thus far, points that have been addressed as future research avenues for MTS work include the study of key players of a MTS, such as boundary spanners or leaders. Additionally, attention has been placed on the importance of expanding our knowledge of the distinct emergent states teams researchers have shed light on over the years and how each may impact MTS dynamics. In the following paragraphs, I would like to draw attention to another important avenue for MTS research, the role of contextual factors.

Distinct contextual characteristics can mitigate or exacerbate the effective functioning of MTS. For instance, the level of interdependence among the teams in a system, whether collaboration is defined as pooled (i.e., where individuals first work independently and later combine their work), sequentially (where a pre-established order is determined for task completion and individuals further down the line tend to be more dependent on those that come before them), reciprocal (i.e., all members within in a team tend to be dependent on one another, not just in a linear fashion), or team (i.e., group members diagnose, problem solve, and collaborate to complete a task, p.75; Thompson 2004, Saavedra, Early, & Van Dyne, 1993) can have differential impact on how processes and emergent states manifest themselves in MTS. For instance, meta-analytic work on the effects of team cohesion on team performance suggests that as team workflow becomes more interdependent the team cohesion and team performance relationship becomes stronger (Gully, Devine, & Whitney, 1995). This is but one example of how task interdependence influences the dynamics of team phenomena. Taking this knowledge and translating it to more complex system of teams, such as MTS, will allow us researchers to be more diagnostic of how to target the development of distinct phenomena, such as cohesion, when it begins to dwindle in MTS.

Another contextual factor that is placed at the forefront of MTS theory, and which is the means via which highly interdependent teams coordination action, is virtual communication. Based on the accessibility, the growing market, and the necessity for rapid communication virtual tools have integrated themselves as part of our work life. Technology has provided us the ability to collaborate across time zones, countries, and oceans. The literature on virtuality has quickly been thrusting forward and paving the way for practitioners to understand the potential advancement of such tools. In 2002 Baltes et al. meta-analysis compared face-to-face teams to virtual teams. In 2004 Fjermestad also focused on the comparison of face-to-face versus virtuality but categorized the literature by considering the synchronicity of information exchanged via virtual tools. In 2005 Kirkman and Mathieu focused on pushing the literature to move beyond face-to-face teams versus virtual teams and to consider the 3 dimensions (use of virtual tools, synchronicity, and informational value provided by virtual tools) on which virtual tools could be categorized.In 2011 Mesmer-Magnus et al. reviewed the virtual team literature taking into consideration the Kirkman and Mathieu virtual tool taxonomywhen identifying teams as being more or less virtual. Building on the work by Kirkman and Mathieu and Mesmer-Magnus et al. this dissertation focused on expanding our understanding of how distinct aspects of virtual tools impact the development of MTS dynamics. Moving beyond the current study further investigation into: the types virtual tools, the information conveyed via virtual tools, the amount oftime employing virtual tools and how each of these influences MTS dynamics is a fruitful avenue for future research.

Up to this point, the importance of key players and how they can be of value to the development of emergent states and behavioral processes has been addressed. Additionally, the importance of taking into consideration and potentially manipulating contextual factors in future studies has also been stressed. The last section that I would like to draw attention to for future MTS research is the methodology used to test research questions.

Although not a principal driver of this dissertation, it was attempted to target the best way to frame questions that would provide participants the ability to conceptualize constructs at MTS level. For instance, the multiteam efficacy questions were framed in two distinct ways with the hopes of providing insight into which is the best way to frame questions pertaining to the MTS level: a)*My team and the other team will be able to achieve most of the goals that are set for the taskforce* and b) *Our taskforce will be able to achieve most of the goals that are set for the taskforce*. In all cases both means of assessing the construct were equally predictive of the dependent variable. Future research in this area could benefit form expanding the findings in this area to other construct and provide more insight into how to best frame the assessment of MTS level constructs.

In an attempt to better understand the MTS measurement literature a number of researchers have drawn attention to the benefits of incorporating network analyses as a tool to assess the relationships that arises in MTS (Poole & Contractor, 2011). Virtual MTS provide a platform in which information exchanged between teams can be traced in order to understand how influential members (i.e., leaders)shape information exchange and development of team cognition. By employing network methodology we may be able to better assess the relationships that form in MTS. Additionally, being able to pinpoint individuals that are key catalyst of organizational change can serve many purposes within organizations. Not only can we target these individuals with new interventions,but also they may be the critical players to relay new knowledge throughout the organization.

Thus far, the measurement discusses have been more obtrusive in nature. By obtrusive, I mean requesting individuals to take time out of their natural daily tasks to complete measures that allow scientist to capture important phenomena of interest. Many times in experimentation, requiring participants to pause to complete measures will influence distinct motivational, affective, and cognitive emergent states as well as behavioral processes that are naturally developing in teams and MTS. Our ability to assess these relationships in a way where we do not break the natural development of these mechanisms forming is an area where this research can improve. Through the review of chat logs, I was able to obtain social and task relevant information, but the data provides a number of other important emergent states and behavioral processes that can be detected, such as aggression, dislike, conflict, backup behavior, etc. Our ability to use these types of measures in conjunction with existing psychometric measures can help us build MTS theory.

Some of the latest work in the field has been targeting the use of unobtrusive measures to capture both team and MTS level mechanisms. Recent work by Baard et al. (2012); DeCostanza and Dirosa (2012); Contractor and DeChurch (2012) have sought to tackle this issue by employing unobtrusive measures of team processes, such as, using physiological measures, and reviewing past gaming history of online gaming communities todiagnose emergent trends. These innovative ways of targeting behavioral processes and emergent states appears to capture a direction that our science is rapidly moving towards. These means of capturing critical mechanisms for the functioning of teams, MTS, and organization allow us to be more efficient with participants' time devoted to our studies, limit the fatigue we cause participants from the lengthy measures we request them to complete, and lastly allow us to go about understanding behavior and emergent phenomena as it naturally occurs without interruptions. As noted this new trend of assessing MTS mechanisms promises a number of benefits that can provide insight into MTS dynamics.

Although a number of alternative ideas for future research are in mind and the list can go on and on, the above-mentioned are the critical next steps for the advancement of MTS theory. In the following section of this discussion a highlight of the theoretical contributionsthis dissertation provides the MTS literature will be discussed. This section will be followed by the contributions that these findings provide organizations and practitioners (i.e., practical implications). Lastly, I will conclude with closing remarks and key take away points of this dissertation.

Theoretical Contributions

This study provides a number of theoretical contributions to the following literatures: multiteam systems, information sharing, and virtuality. First this study provides insight into a number of mechanisms that over the last 25 plus years have been critical drivers of team functioning (Kozlowski & Ilgen, 2006, Mathieu et al., 2008). Here they are unmasked yet in another context, MTS, and their importance noted. For instance, understanding that MTS members' perspectives on the system's potential to successful accomplish it's tasks is a driving force of both the behavior members engage in as well as the potential for developing cognitive architecture of the situation at hand.

Second, this study extends the IS literature to a new context that is ever growing in our daily lives, MTS. Building on the team IS literature, the extension of IS taking place both between and within teams is a critical difference that must be targeted in future research in order to advance our understanding of MTS IS. In addition through this study IS characterized as unique and open were separately analyzed to focus on the contribution of each onMTSbehavioral processes, emergent states and performance. Additionally, the study of these constructs was done through a virtual context lens, which brings me to the final theoretical contribution of this study, the advancement of the virtuality literature.

Going beyond the traditional way of studying virtuality (Baltes et al., 2002) where a comparison between face-to-face teams and virtual teams takes place, this dissertation sought to incorporate the Kirkman and Mathieu's (2005) taxonomy of virtual teams and consider distinct characteristics the virtual tools encompass. For instance, the virtual tool employed provided participants the ability to use a number of distinct virtual functions such as video conference calls, audio conference call, or chat. This study focused on both the type of information exchanged through these mechanisms (social versus task) as well as the time devoted to the use of each tool and how it influenced the development of MTS behavioral processes and emergent states. Advancing the science through theoretical contributions is important for the growing science of MTS, but being able to translate these findings to our everyday lives is also essential.

Practical Implications

Results from this dissertation provide a number of suggestions for practitioners to incorporate in order to make MTS more effective. First, our understanding of what motivates individuals is critical. Our ability to train organizational leaders in promoting MTS level efficacy is one avenue in which real world MTS can benefit. One place in which MTS are prevalent and in which effective coordination is vital is in the Armed Forces. Effective coordinationbetween teams within a platoon is critical for the life of the men that comprise each team, the system, and the nation. Thus, through this research our ability to understand that efficacy is a critical driver of action, such as sharing information and a precursor of developing shared cognition, we can hone the skills of our military officers to promote and target the development of this emergent state. Along the same lines, incorporating training that provides awareness and prescriptive solutions on building collective efficacy can provide a great deal of difference when it comes to the advancement of these systems.

Again emphasizing the importance of training, as organizations turn to MTS as a means of organizing work managers ability to provide a shared schema of the situation can prove to be fruitful for the functioning of MTS. The work presented here suggests that possessing a shared schema was positively related to communicating across team boundaries of a MTS. Therefore, our ability to train managers and component MTS teams in the importance of establishing an accurate and similar understanding of the situation can be of value to a MTS's future collaborative efforts.

Second, this dissertation provides new advancements in our understanding of how virtual tools, which are inundating our daily work lives, can be beneficial and detrimental for the exchange of information both within and between teams. The ability to promote the use of tools that enhance the informational value conveyed and that provide for information to be retrieved at a later time is a key driver in promoting sharing of information across team boundaries and essentially promoting the effectiveness of MTS. Organizations can foster a work environment in which the use of these tools is a standard means via which meetings take place. Additionally, promoting not only the use of the tools but the value they provide in better grasping project details, gaining a system level perspective, as well as assisting with the sharing of valuable information between teams of a MTS is a way to enhance buy-in by organizational members that comprise these systems and employee virtual tools. Through these forms of tools, organizations can promote and provide an open communication culture via virtual tools.

Lastly, in this dissertation open information sharing was more predictive of MTS performance when compared to other forms of information sharing. It is important to note that open information sharing was assessed using a subjective measure, whereas both unique and commonly held information sharing was assessed via objective measures. These findings suggest that individual's perceptions of openly sharing information are an important driver of MTS performance. Thus promoting an organizational climate where individuals are not hesitant toshare information or seek information via virtual communication tools is important for the functioning of virtual MTS.

Conclusion

The findings provided in this dissertationalludeto a number of important take away. First, three important conclusions of this research: a)Both MTS level efficacy and trust are important drivers of exchanging information in MTS and the development of MTS cognition, b)Possessing a similar MTS SMM is an important driver of exchanging information across and within teams of a MTS, and c)Employing virtual tools that provide for the retrievability of information at a later time can enhance information exchange across teams in a MTS. Second,our ability as scientist to advance our understanding ofhow to make MTS more effective via behavioral processes and emergent states that evolve in MTS is important with the advancing nature of MTS work in our organizations. One means via which we can do this is by employing unobtrusive tools such as the virtual communication tools to further understand these dynamics as they naturally evolve in MTS. Lastly,as practitioners our ability to translate scientific findings into effective organizational strategies and trainingis important for the success of MTS. The findings and study limitations presented here outline a number of promising avenues for practitioners to tackle in the near future with the goal of advancing our knowledge and forging effective MTS.

APPENDIX A

FIGURES

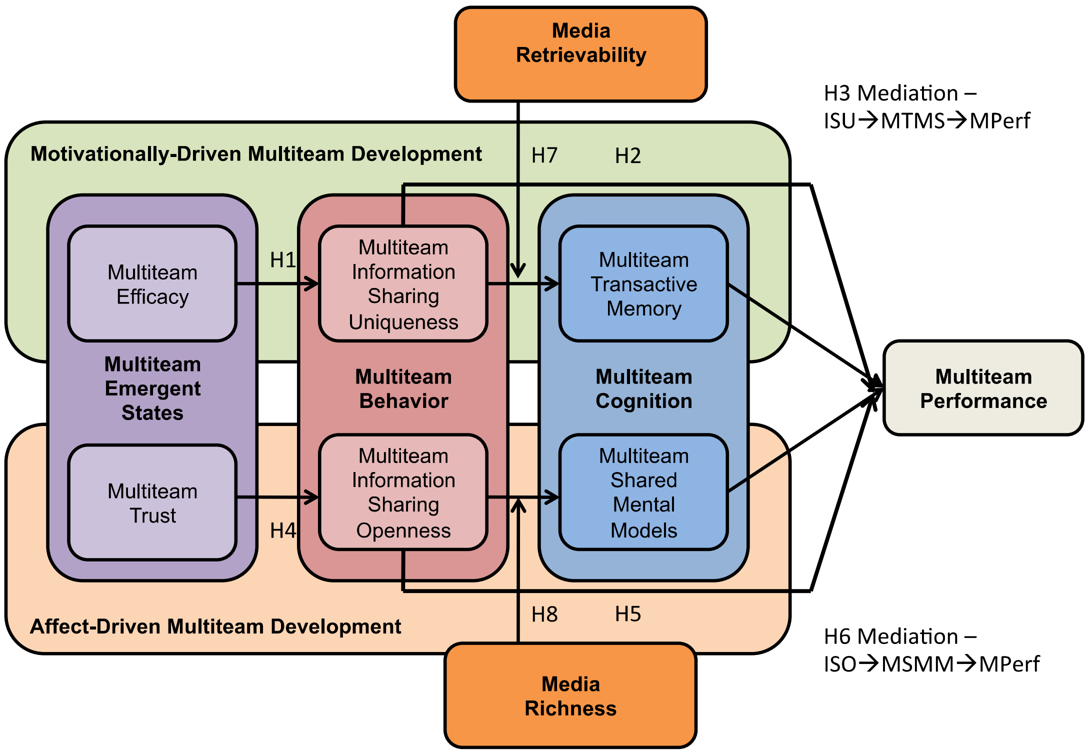


Figure 1: Theoretical model.

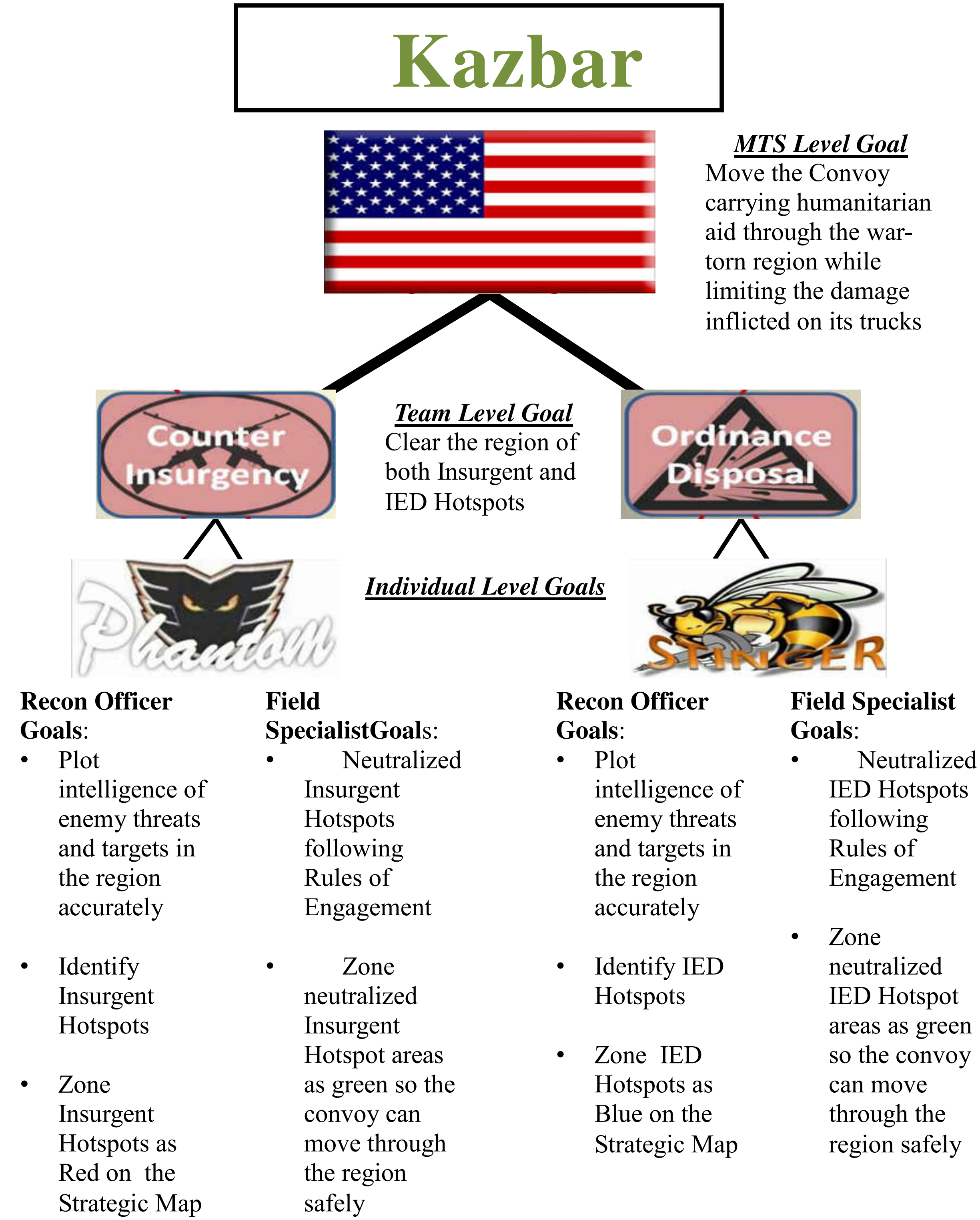


Figure 2: Taskforce DELTA goal hierarchy.

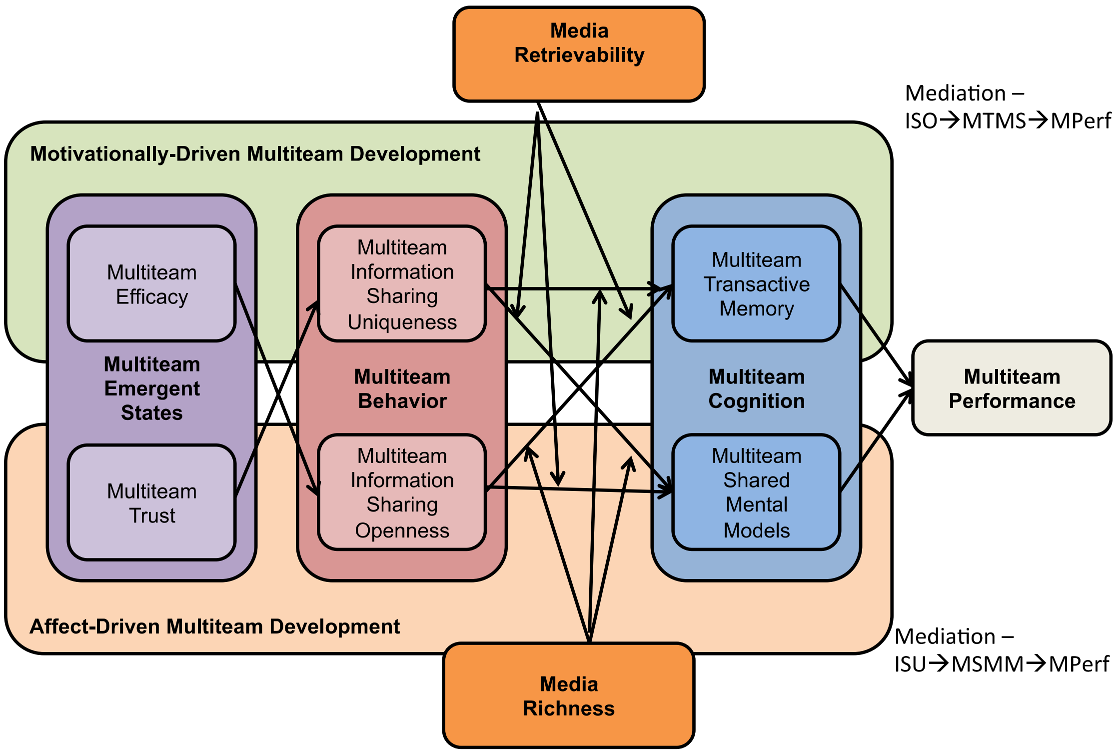


Figure 3: Follow-up exploratory analysis Model 1.

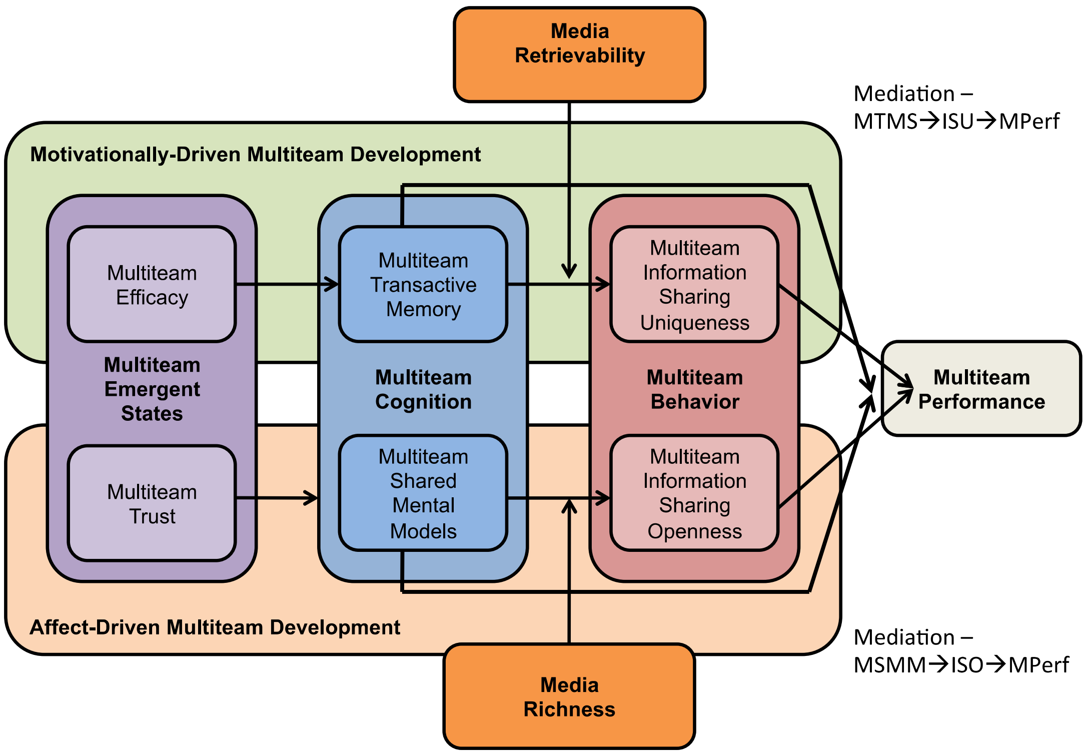


Figure 4: Follow-up exploratory analysis Model 2.

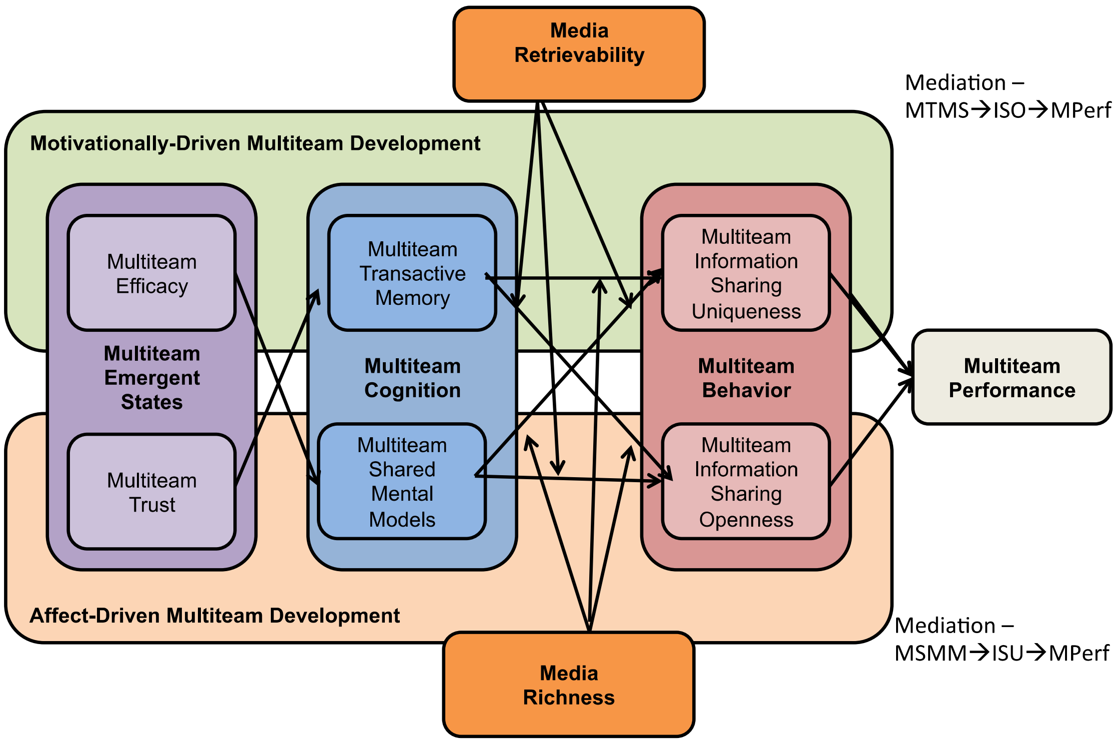


Figure 5: Follow-up exploratory analyses Model 3.

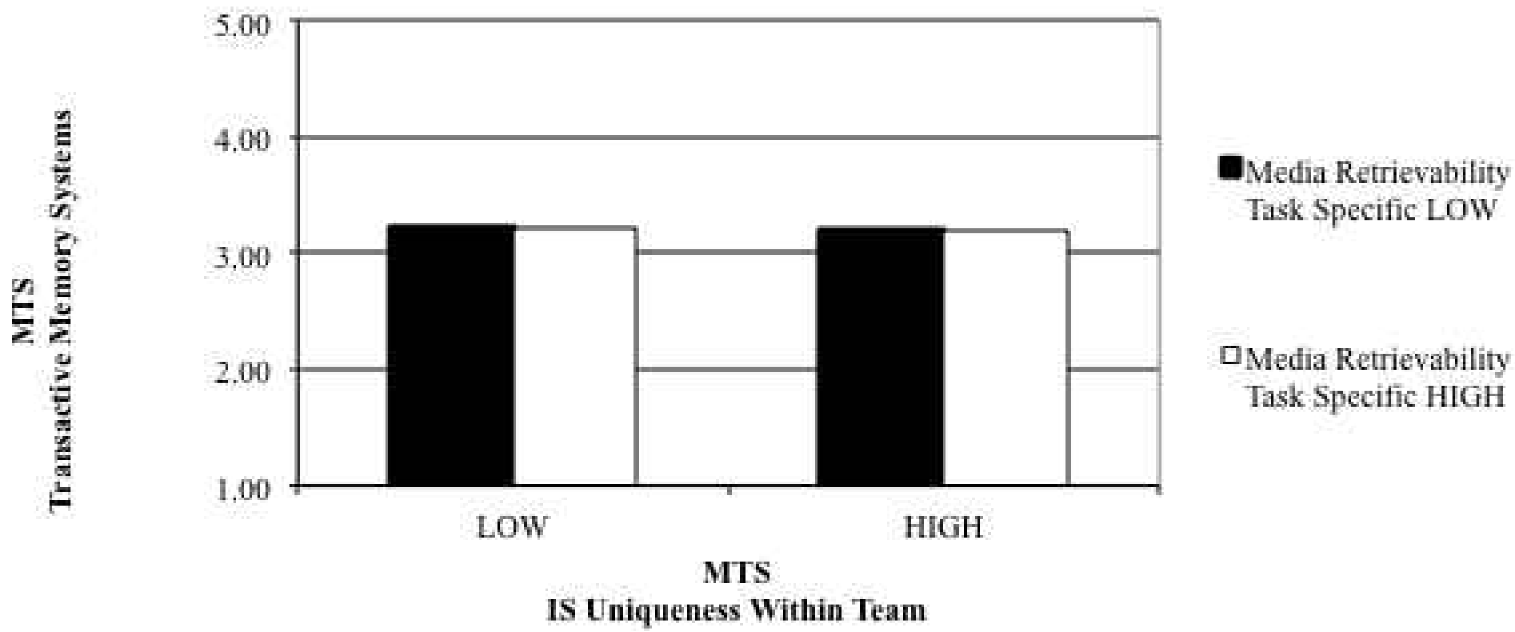


Figure 6: Information sharing uniqueness within team and multiteam TMS relationship moderated by media retrievability task information exchanged – depiction of Model 31.

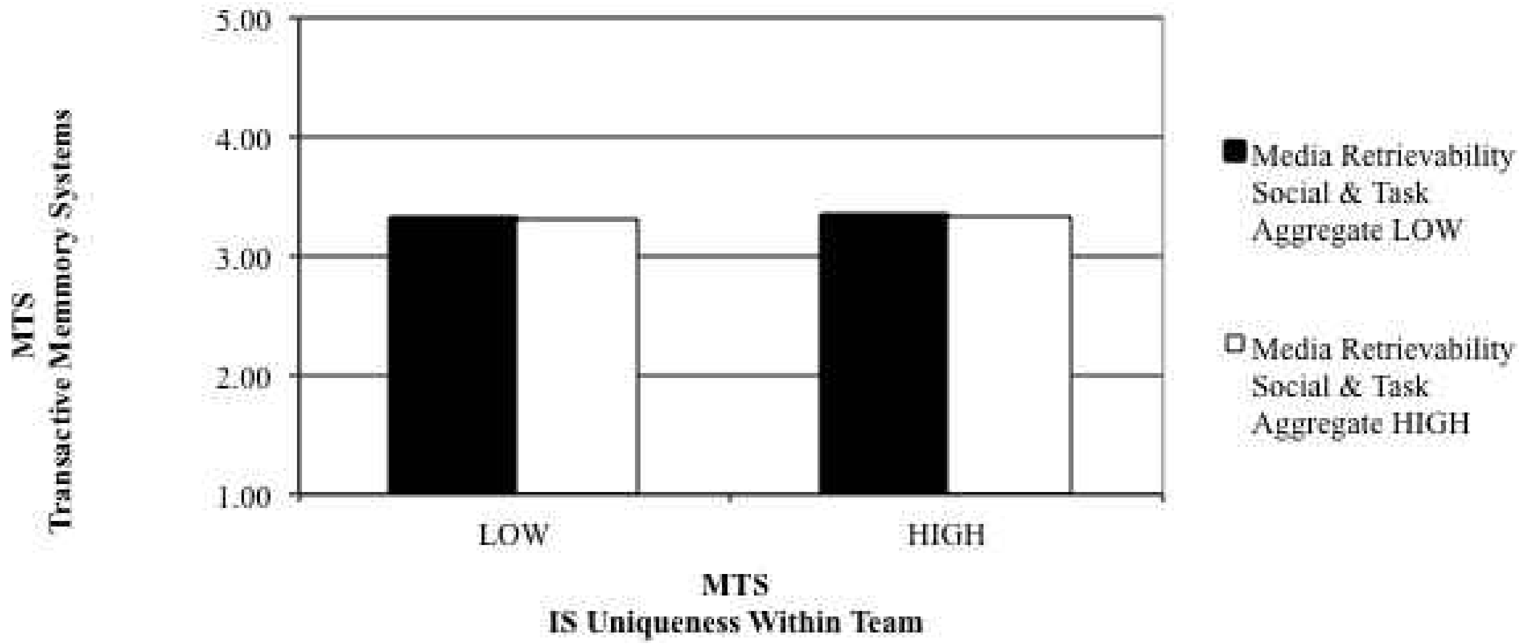


Figure 7: Information sharing uniqueness within team and multiteam TMS relationship moderated by media retrievability social and task information exchanged – depiction of Model 33.

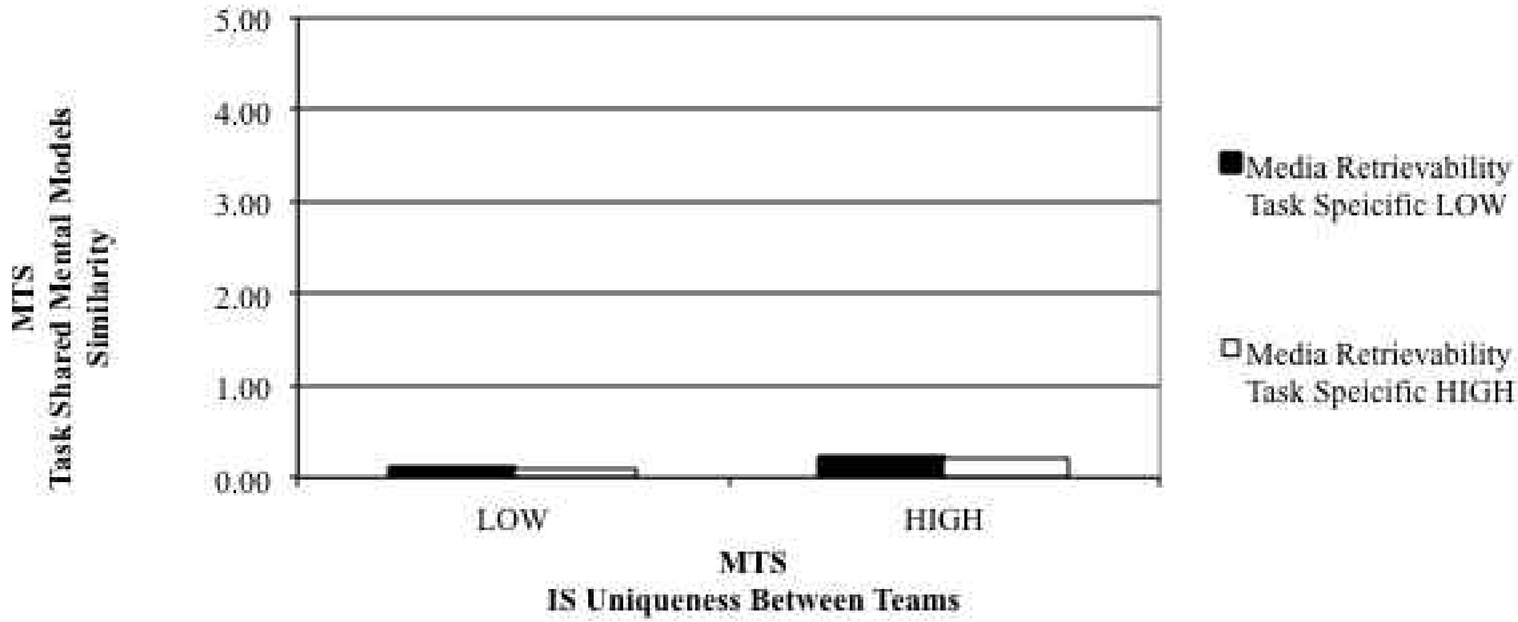


Figure 8: Information sharing uniqueness between teams and multiteam task SMM relationship moderated by media retrievability task information exchanged – depiction of Model 66.

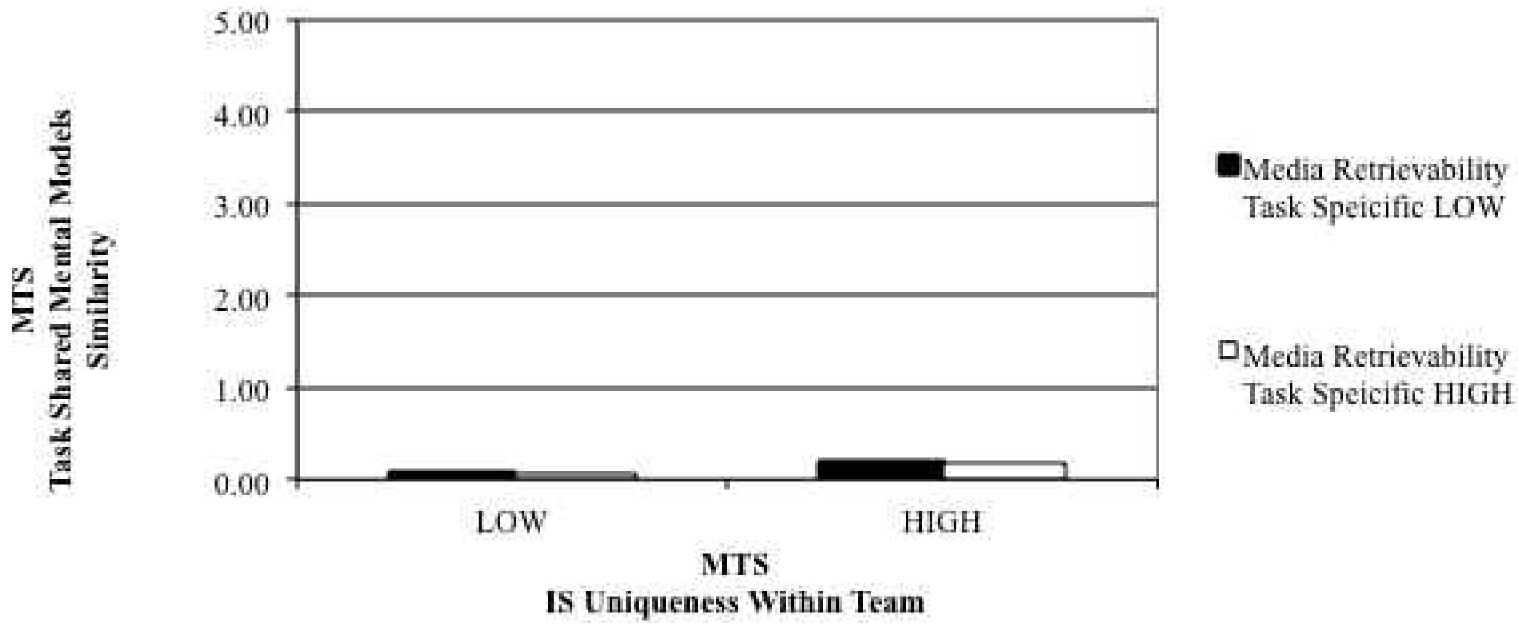


Figure 9: Information sharing uniqueness within team and multiteam task SMM relationship moderated by media retrievability task information exchanged – depiction of Model 67.

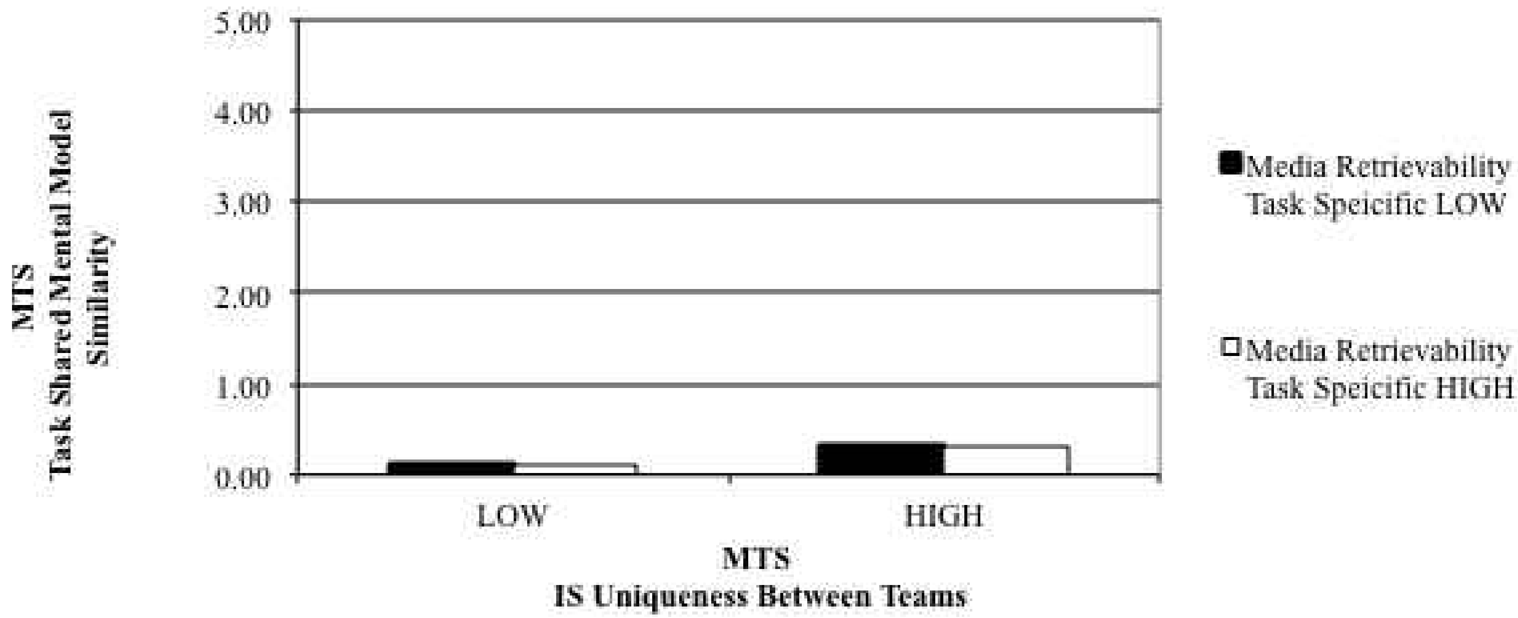


Figure 10: Information sharing uniqueness between teams and multiteam task SMM relationship moderated by media retrievability task information exchanged – depiction of Model 68.

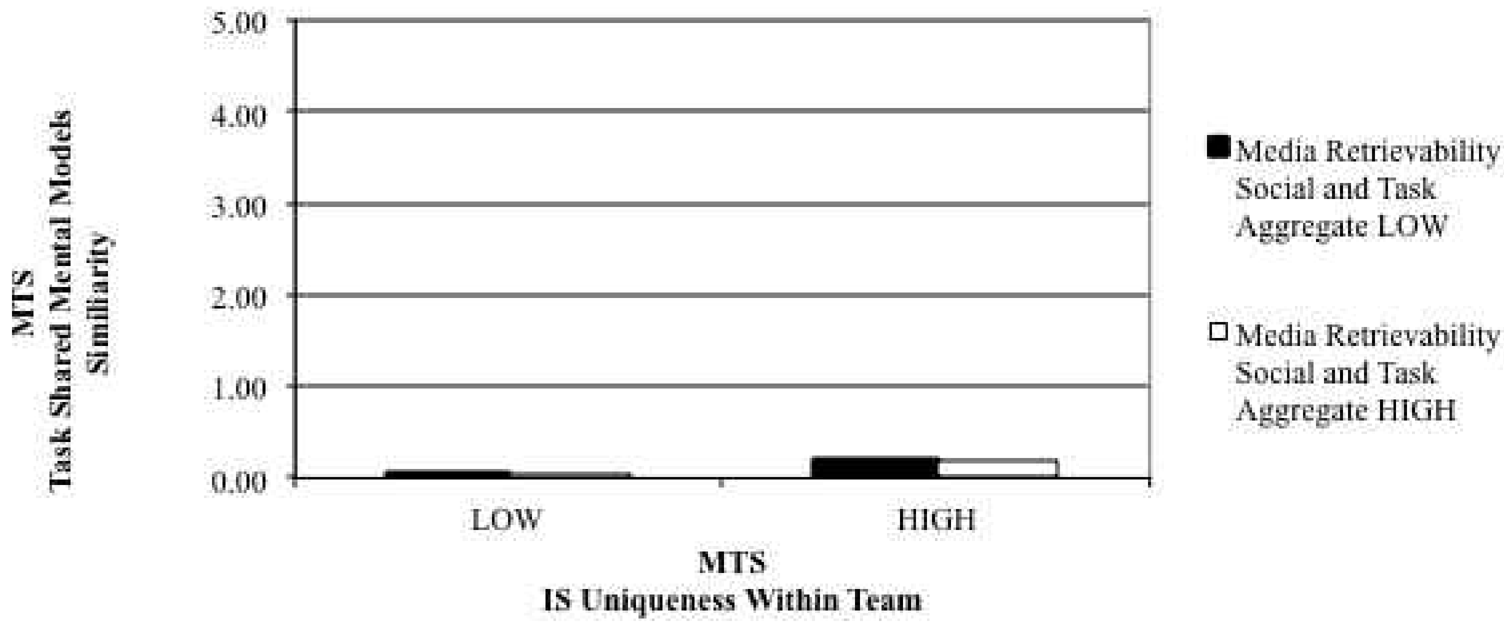


Figure 11: Information sharing uniqueness within team and multiteam task SMM relationship moderated by media retrievability task information exchanged– depiction of Model 69.

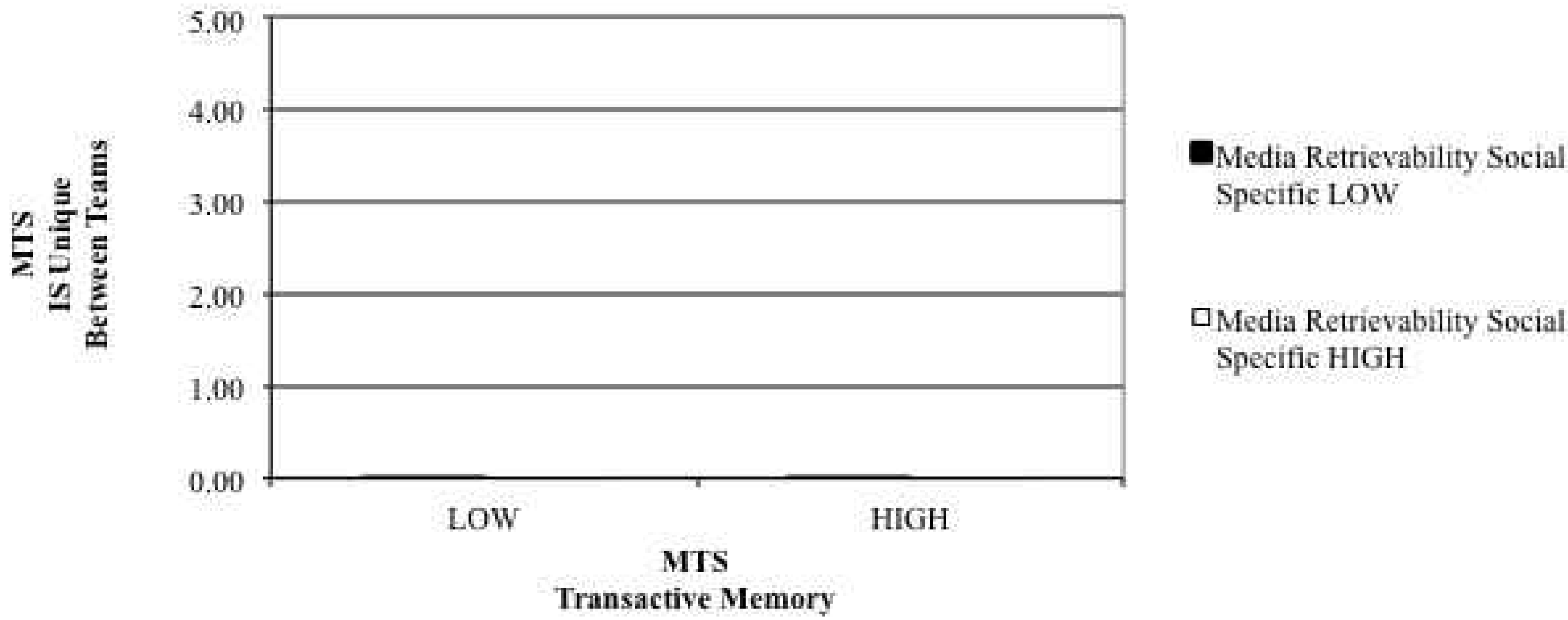


Figure 12: Multiteam TMS and information sharing uniqueness between teams relationship moderated by media retrievability social information exchanged – depiction of Model 123.

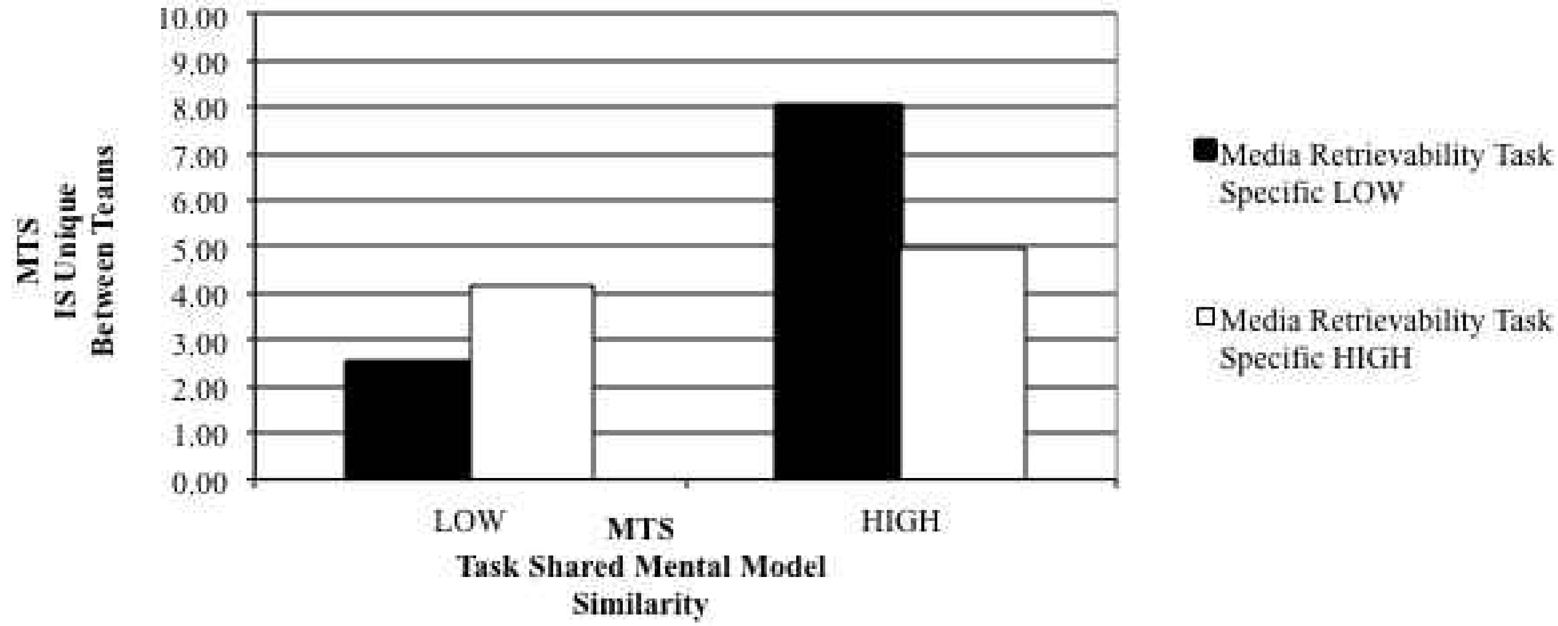


Figure 13: Multiteam task SMM and information sharing uniqueness between teams relationship moderated by media retrievability task information exchanged – depiction of Model 169.

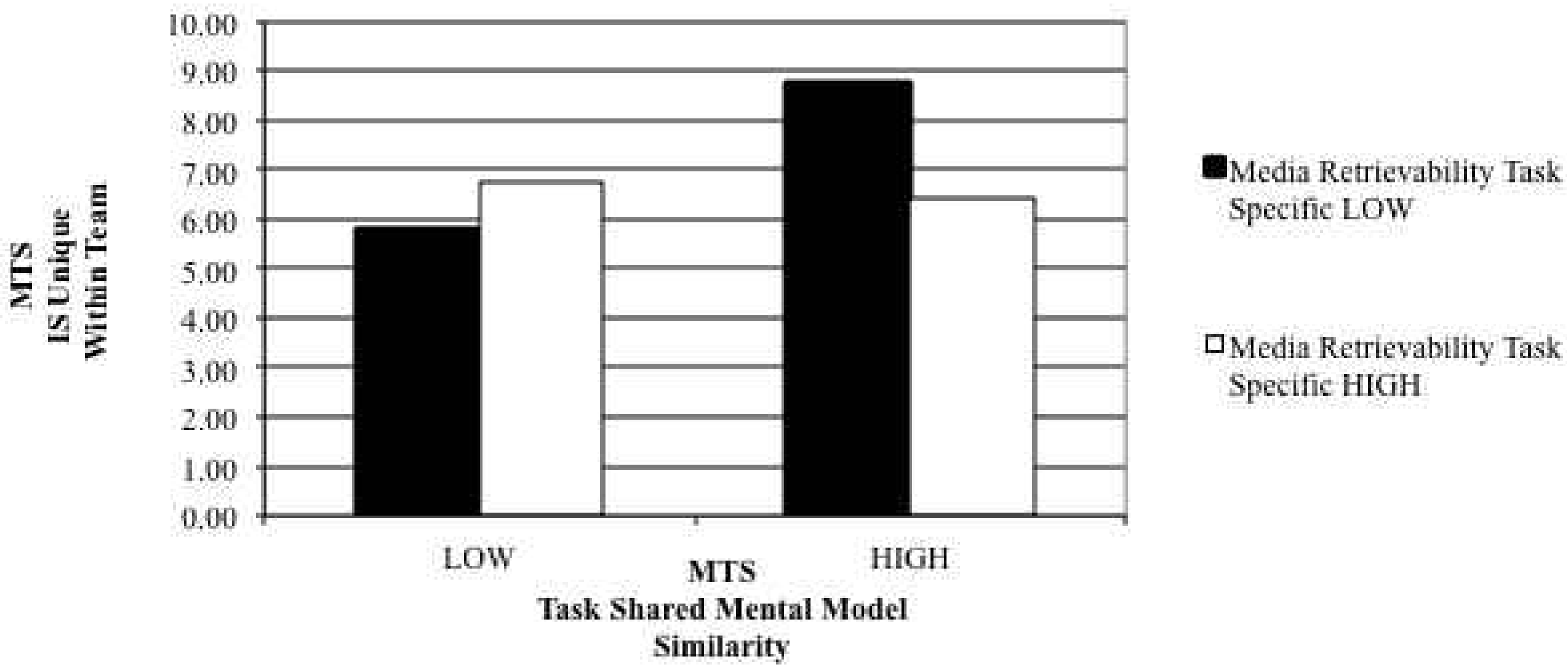


Figure 14: Multiteam task SMM and information sharing uniqueness within team relationship moderated by media retrievability task information exchanged – depiction of Model 178.

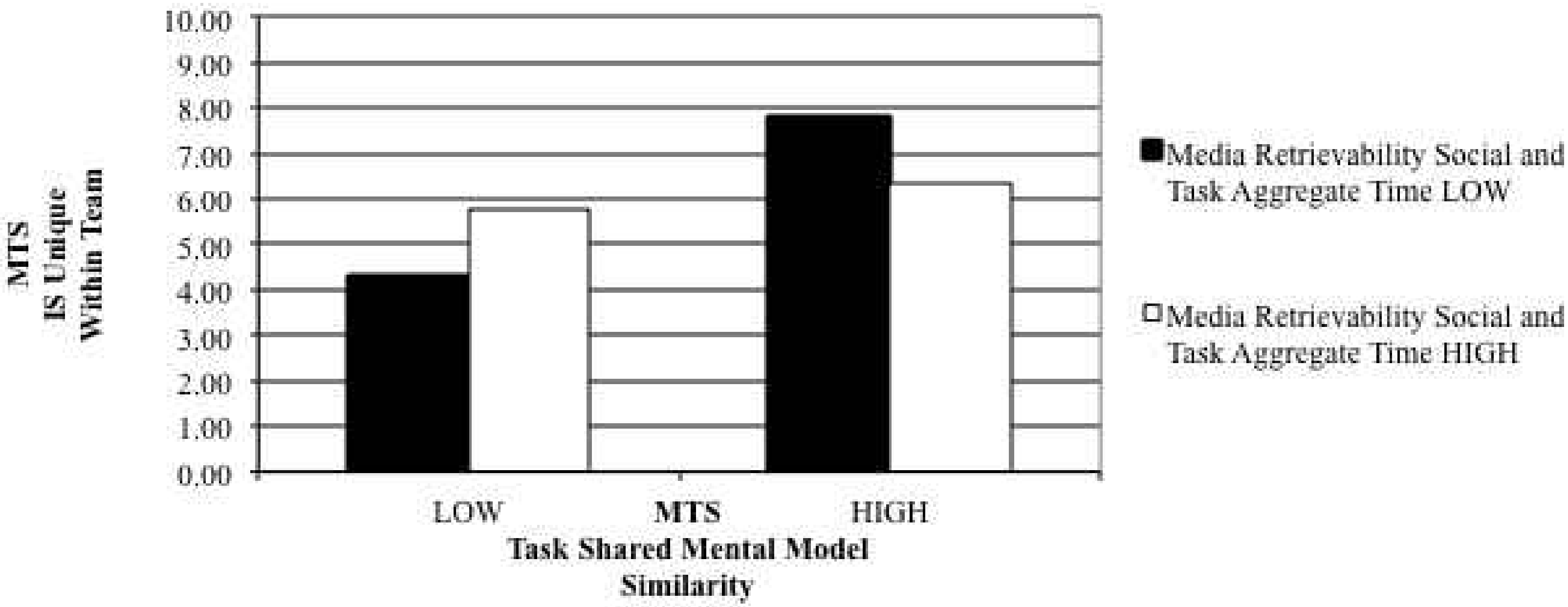
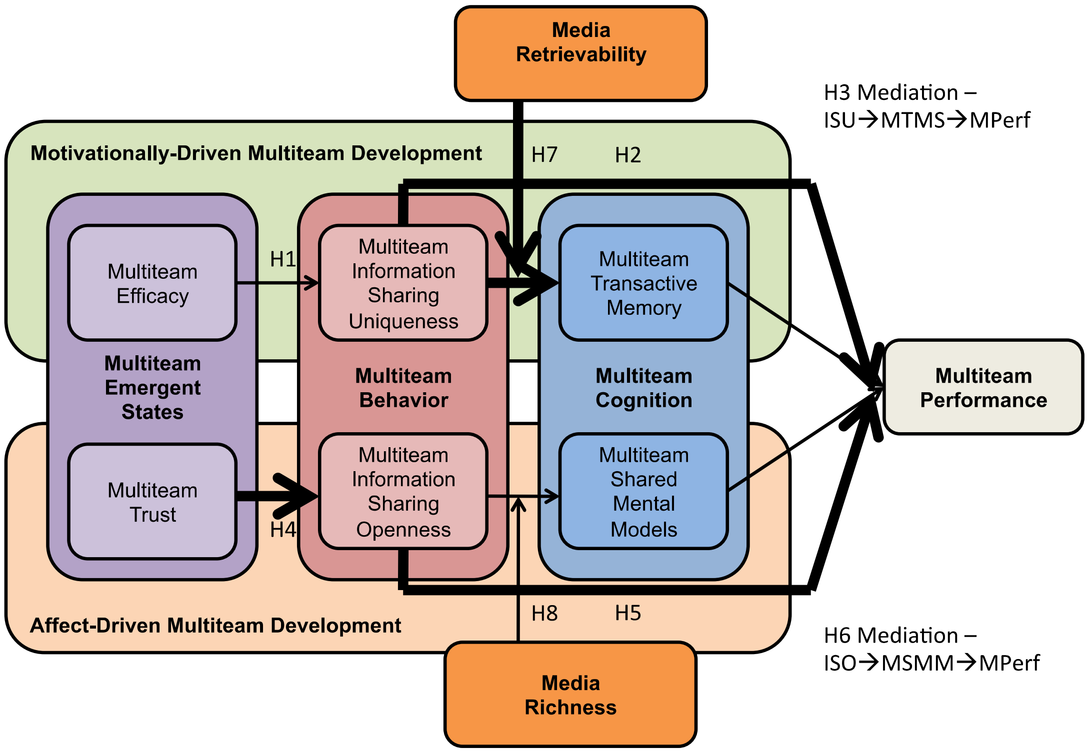
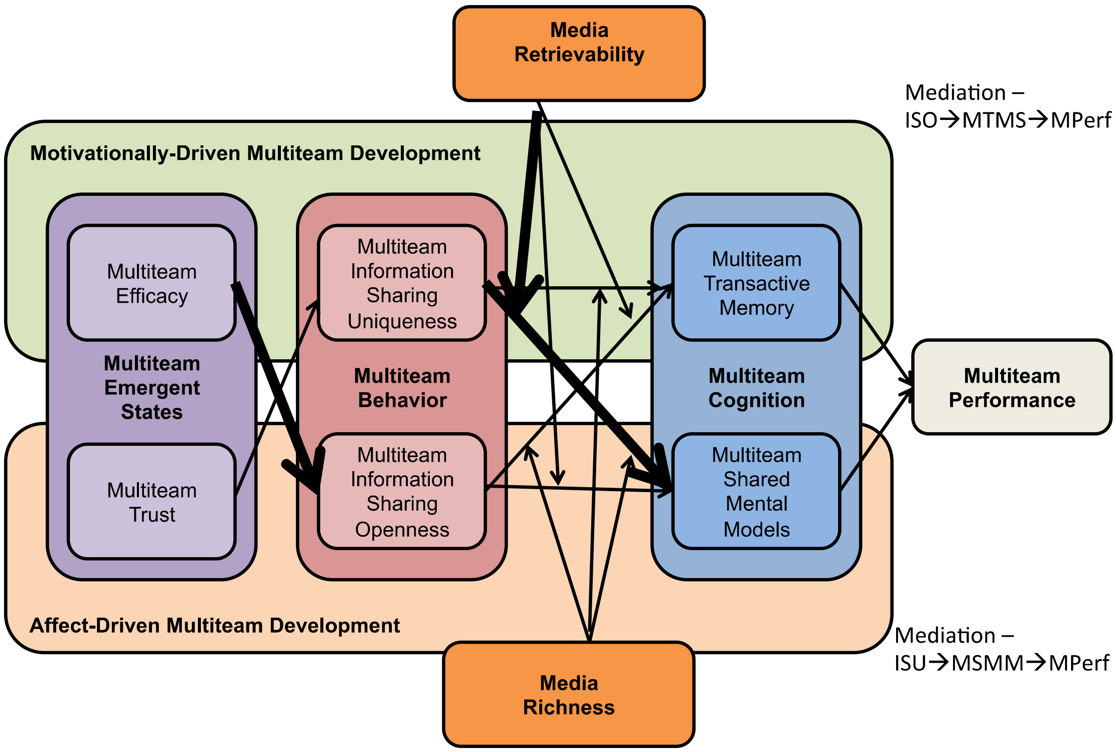


Figure 15: Multiteam task SMM and information sharing uniqueness within team relationship moderated by media retrievability social and task information exchanged – depiction of Model 181.



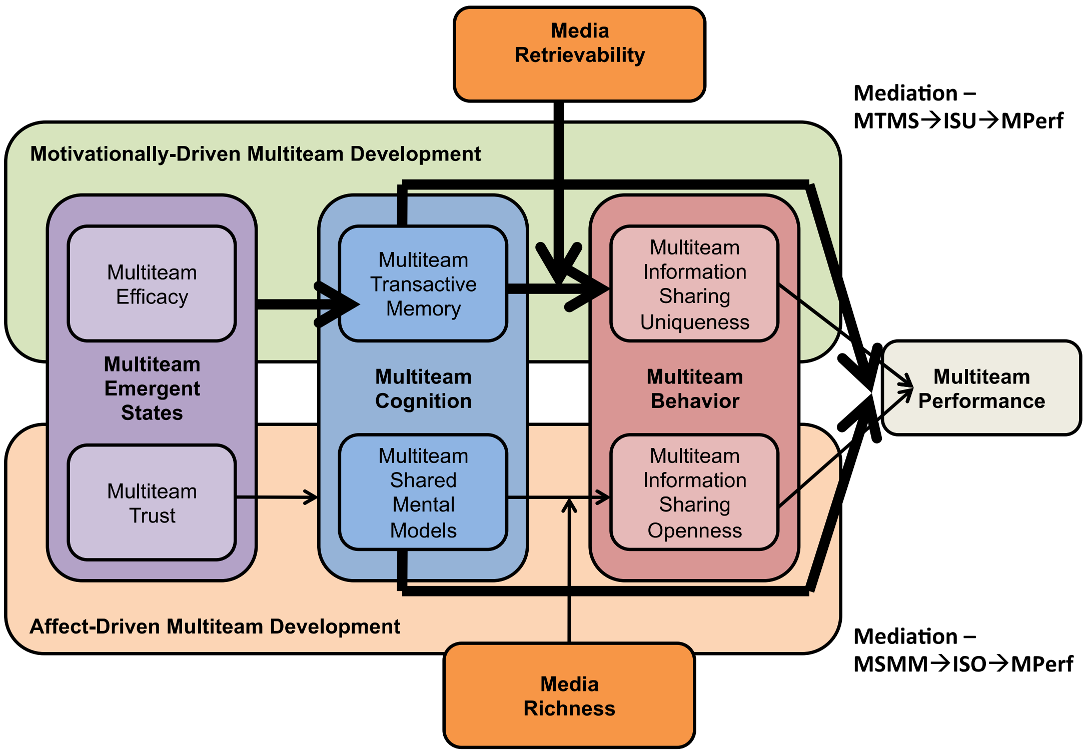
Note. Supported findings have been bolded.

Figure 16: Theoretical model findings.



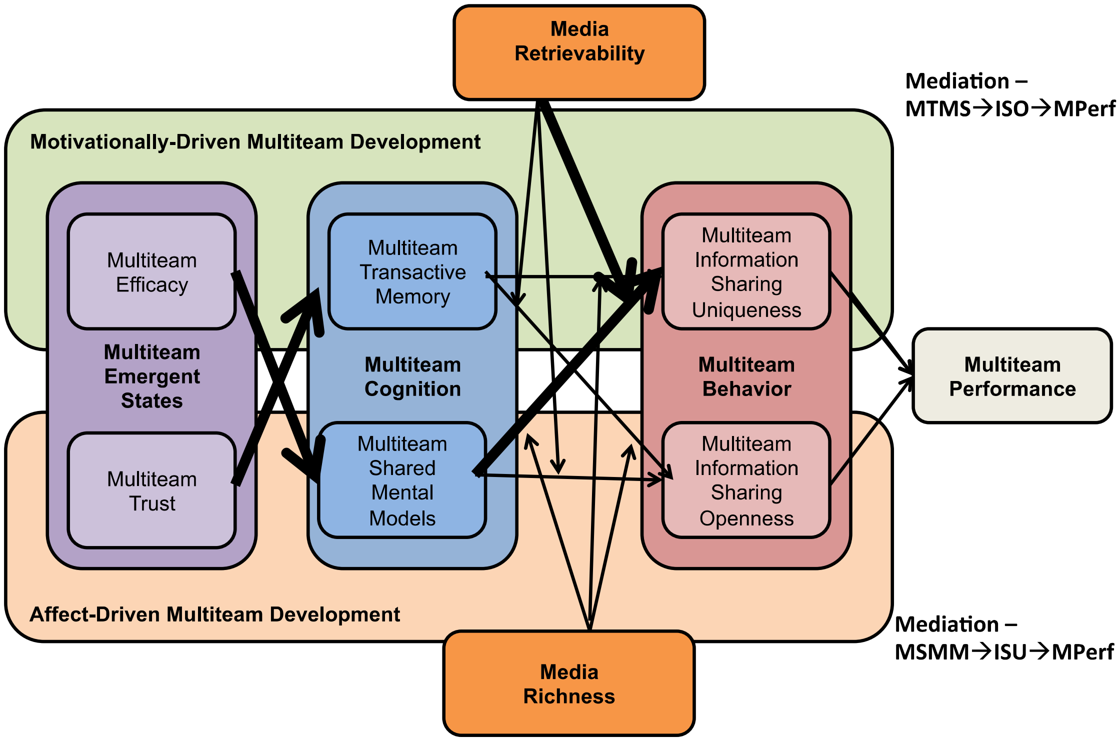
Note. Supported findings have been bolded.

Figure 17: Follow-up exploratory analysis Model 1 findings.



Note. Supported findings have been bolded.

Figure 18: Follow-up exploratory analysis Model 2 findings.



Note. Supported findings have been bolded.

Figure 19: Follow-up exploratory analysis Model 3 findings.

APPENDIX B

TABLES

Table 1: Dissertation Hypotheses Summarized

No.	Hypothesis	Supported vs. Not Supported	Table	Model	Figure	Notes
Theoretical Model						
1	MTS efficacy is positively related to MTS IS uniqueness.	NS	12	1-10		
2	MTS IS uniqueness is positively related to MTS performance.	S	13	11-14		Not supported for efficiency (Model 11), but supported for effectiveness (Models 13 and 14).
3	MTS IS uniqueness is positively related to MTS performance through (i.e., mediated by) the MTS TMS.	NS	14	15-18		
4	MTS trust is positively related to MTS IS openness.	S	15	19		Model 19 depicts the supported relationship.
5	MTS IS openness is positively related to MTS performance.	S	16	20 & 21		Supported for multiteam efficiency and effectiveness.
6	MTS IS openness is positively related to MTS performance through MTSSMM.	NS	17	22-27		

Table 1

No.	Hypothesis	Supported vs. Not Supported	Table	Model	Figure	Notes
7	Media retrievability moderates the relationship between MTS IS uniqueness and MTS TMS. When MTS engage in more MTS IS via high information friendly retrievable tools, such as chat messages (i.e., high retrievability media), the relationship between MTS IS uniqueness and MTS TMS will be stronger than when multiteam systems utilize low information friendly retrievable tools, such as video and voice communication (i.e., low retrievability media) to exchange MTS IS uniqueness.	S	18	28-33	6 & 7	Model 31 depicts the media retrievability task moderator and model 33 depicts the media retrievability social and task aggregate moderator.
8	Media richness moderates the relationship between MTS IS openness and MTSSMM, such that when multiteam systems engage in MTS IS Open using more rich media (e.g., video communication), MTS SMM will be more similar than when open information exchange occurs through less rich media (e.g., text messaging).	NS	19	34-36		
Exploratory Analyses						
	MTS efficacy will be positively related to MTS IS openness	S	20	37-41		Models 37-40 depict the supported relationships and model 16 depicts the non-supported relationship.

Table 1

Relationship Studied	Supported vs. Not Supported	Table	Model	Figure	Notes
Follow-up Exploratory Analyses Model 1					
MTS efficacy will be positively related to MTS IS openness	S	20	37-41		Models 37-40 depict the supported relationships and model 16 depicts the non-supported relationship.
MTS IS openness will be positively related to MTS performance through MTS TMS.	NS	21	42 & 43		
MTS trust will be positively related to MTS IS uniqueness.	NS	22	44 & 45		
MTS IS uniqueness will be positively related to MTS performance through MTS SMM.	NS	23	46-57		
Media retrievability will moderate the relationship between MTS IS uniqueness and MTS SMM.	S	24	58-75	8-11	Models 66-69 depict supported relationships for Task SMM. Was not supported for Goal SMM or Team SMM.
Media retrievability will moderate the relationship between MTS IS openness and MTS TMS.	NS	25	76-78		

Table 1					
Relationship Studied	Supported vs. Not Supported	Table	Model	Figure	Notes
Media retrievability will moderate the relationship between multiteam information sharing openness and multiteam SMM.	NS	26	79-87		
Media richness will moderate the relationship between MTS IS openness and MTS TMS.	NS	27	88		
Media richness will moderate the relationship between MTS IS uniqueness and MTS SMM.	NS	28	89-94		
Media richness will moderate the relationship between MTS IS uniqueness and MTS TMS.	NS	29	95 & 96		
Follow-UpExploratory Analyses Model 2					
MTS efficacy will be positively related to MTS TMS.	S	31	97-101		Models 97-100 depict the supported relationships.
MTS TMS will be positively related to MTS performance.	S	32	102 & 103		Model 103 depicts the supported relationship for multiteam effectiveness. Not supported for multiteam efficiency.

Table 1

Relationship Studied	Supported vs. Not Supported	Table	Model	Figure	Notes
MTS TMS will be positively related to MTS performance through MTS IS uniqueness.	S	33	104-107		Model 106 MTS TMS is positively related to performance via MTS IS Unique between teams
MTS trust will be positively related to MTS SMM.	NS	34	108-110		
MTS SMM will be positively related to MTS performance.	S	35	111-116		Not supported for multiteam efficiency or goal and team SMM. Model 115 depicts the supported relationship for Task SMM
MTS SMM will be positively related to MTS performance through MTS IS openness.	S	36	117-122		Model 121 depicts full mediation. MTS Task SMM → MTS IS Openness→ MTS Performance (Effectiveness)

Table 1

Follow-UpExploratory Analyses Model 3

Relationship Studied	Supported vs. Not Supported	Table	Model	Figure	Notes
Media retrievability will moderate the relationship between MTS TMS and MTS IS uniqueness.	S	37	123-128	12	Model 123 MTS TMS is positively related to MTS IS Unique Between teams via Media Retrievability Social
Media richness will moderate the relationship between MTS SMM and MTS IS openness.	NS	38	129-131		
MTS efficacy will be positively related to MTS SMM.	S	39	132-146		Models 132-134 depict the supported relationships.
MTS trust will be positively related to MTS TMS.	S	40	147		Model 147 depicts the supported relationship
MTS TMS will be positively related to MTS performance (efficiency and performance) through MTS IS openness.	S	41	148 & 149		Model 148 and 149 depict the supported relationship for MTS efficiency and MTS effectiveness.

Table 1

Relationship Studied	Supported vs. Not Supported	Table	Model	Figure	Notes
MTS SMM will be positively related to MTS performance (efficiency and effectiveness) through MTS IS uniqueness.	NS	42	150-161		Models 158 and depict full mediation. MTS SMM→ MTS IS Uniqueness Between Teams→MTS Performance (Effectiveness).
Media retrievability will moderate the relationship between MTS TMS and TS IS openness.	NS	43	162-164		

Table 1

Relationship Studied	Supported vs. Not Supported	Table	Model	Figure	Notes
Media retrievability will moderate the relationship between MTS SMM and MTS IS uniqueness.	S	44	165-182	13 -15	Model 169 depicts th relationships betweer multiteam task SMM and multiteam information sharing unique between team moderated by Media retrievability task specific. Model 178 depicts the relationship between multiteam task SMM and multiteam information sharing unique within team moderated by Media retrievability task specific. Model 181 depicts the relationship between multiteam task SMM and multiteam information sharing unique within team moderated by Media retrievability social and task specific.

Table 1

Relationship Studied	Supported vs. Not Supported	Table	Model	Figure	Notes
Media retrievability will moderate the relationship MTS SMM and MTS IS openness.	NS	45	183-191		
Media richness will moderate the relationship between MTS SMM and MTS IS uniqueness.	NS	46	192-197		
Media richness will moderate the relationship between MTS TMS and MTS IS openness.	NS	47	198		
Media richness will moderate the relationship MTS TMS and TMS IS uniqueness.	NS	48	199 & 200		

Table 2: Zero Order Correlations of Study Variables

	M	SD	1	2	3	4	5	6	7	8	9	10	11	12	13
1.PC/Video Play Experience	1.52	.37	1												
2.Iming	4.42	.48	.16	1											
3.TaskEfficacy	4.17	.46	.27*	.19	1										
4.Taskforce Efficacy Both Teams	3.76	.54	.10	-.01	.74**	1									
5.TaskForce Efficacy	3.79	.54	.16	.03	.74**	.95**	1								
6.Taskforce Efficacy Percentage	80.25	9.94	.11	.13	.72**	.61	.62**	1							
7.Taskforce Efficacy Total Yes	3.34	.85	-.04	.20	.07	.05	.08	.03	1						
8.Multiteam Trust	3.37	.23	.16	-.05	.52**	.48**	.51**	.38**	.12	1					
9.IS Uniqueness Between	4.16	2.62	.06	.10	.11	.02	.01	.05	.13	.08	1				
10.IS Uniqueness Within	3.30	1.83	.22*	.06	.15	.17	.18	.13	-.02	.09	.67**	1			
11.IS Common Between	2.22	1.67	-.02	.02	.07	-.05	-.00	.05	.16	-.10	.43**	.36**	1		
12.IS Common Within	15.17	7.95	.06	.06	.05	.03	.06	.04	.05	-.03	.61**	.66**	.48**	1	
13.IS Openness	3.34	.43	.10	.25*	.51**	.47**	.43**	.29**	.16	.37**	.24*	.26*	.09	.09	1
14.TMS	4.02	.26	.15	.25*	.54**	.47**	.45**	.42**	.05	.37**	.01	.01	-.07	.00	.58**
15.Goal SMM	.33	.33	.21	.20	.26*	.31**	.24*	.19	.19	.17	.10	.01	-.00	.01	.28*
16.Task SMM	.16	.22	.24*	-.04	.14	-.05	-.04	-.02	-.00	.14	.26*	.22	.05	.04	.35**

Table 2: Zero Order Correlations of Study Variables

	M	SD	1	2	3	4	5	6	7	8	9	10	11	12	13
17.Team SMM	.10	.16	.05	.10	-.04	-.06	-.04	.06	.22	-.09	.05	-.07	.05	.12	-.08
18.MTS Efficiency	58.34	12.54	.29**	.29**	.40**	.21	.25*	.27*	.10	.14	.24*	.23*	.10	.04	.38**
19.MTS Effectiveness	6.08	2.91	.24*	.16	.37	.23*	.26*	.23*	.07	.27*	.26*	.26*	.06	.02	.38**

Table 2: Zero Order Correlations of Study Variables

	14	15	16	17	18
1.PC/Video Play Experience					
2.Iming					
3.TaskEfficacy					
4.Taskforce Efficacy Both Teams					
5.TaskForce Efficacy					
6.Taskforce Efficacy Percentage					
7.Taskforce Efficacy Total Yes					
8.Trust					
9.IS Uniqueness Between					
10.IS Uniqueness Within					
11.IS Common Between					
12.IS Common Within					
13.IS Openness					
14.TMS	1				
15.Goal SMM	.40**	1			
16.Task SMM	.29*	.28*	1		
17.Team SMM	-.03	.24	-.02	1	
18.MTS Efficiency	.28*	.20	.17	-.09	1
19.MTS Effectiveness	.33**	.10	.27*	-.13	.62**

Note. N = 82; † = p >.10; * = p <.05; ** = p <.01

Table 3: Cronbach Alpha and Rwg Statistics for Study Variables

Variable	α	Rwg
Trust	.58	.78
Task Efficacy	.81	.88
Taskforce Efficacy (teams)	.97	.90
Taskforce Efficacy	.97	.93
Bandura Yes/No	.84	-
Bandura Percentage	.87	.89
TMS	.95	.95
IS Open	.90	.98

Table 4: Multiteam Efficacy

Task Efficacy
1. How far do you think your team and the other team can move the convoy in the upcoming trial?
2. How far do you think your team and the other team can move the convoy without getting much damage in the upcoming trial?
3. How much intel do you think your team and the other team will share in the upcoming trial?
4. What is the percentage that you can neutralize hotspots in the upcoming trial?
Taskforce Collective Efficacy (Chen et al., 2001 Team-Based)
1. My team and the other team will be able to achieve most of the goals that are set for the taskforce.
2. When facing difficult tasks, I am certain that my team and the other team will accomplish them.
3. In general, I think that my team and the other team can obtain outcomes that are important.
4. I believe that my team and the other team can succeed at most any task we encounter in our mission.
5. My team and the other team will be able to successfully overcome challenges in the mission environment.
6. I am confident that my team and the other team can perform effectively on our tasks.
7. Compared to other taskforces, my team and the other team can do most tasks very well.
8. Even when things are tough, my team and the other team can perform quite well.
9. I am confident that my team and the other team can perform effectively on our tasks.
10. Compared to other taskforces, my team and the other team can do most tasks very well.
11. Even when things are tough, my team and the other team can perform quite well.
Taskforce Collective Efficacy (Chen et al., 2001 Multiteam System-Based)
1. Our taskforce will be able to achieve most of the goals that are set for the taskforce.
2. When facing difficult tasks, I am certain that our taskforce will accomplish them.
3. In general, I think that our taskforce can obtain outcomes that are important.

Table 4: Multiteam Efficacy

4. I believe that our taskforce can succeed at most any task we encounter in our mission.

5. Our taskforce will be able to successfully overcome challenges in the mission environment.

6. I am confident that our taskforce can perform effectively on our tasks.

7. Compared to other taskforces, our taskforce can do most tasks very well.

8. Even when things are tough, our taskforce can perform quite well.

9. Our taskforce will be able to achieve most of the goals that are set for the taskforce.

10. When facing difficult tasks, I am certain that our taskforce will accomplish them.

11. In general, I think that our taskforce can obtain outcomes that are important.

Multiteam Efficacy Bandura

1a. I believe that our taskforce team can finish the mission in the upcoming mission

1b. Based on your above answer, how certain are you?

2a. I believe that our taskforce can neutralize all hotspots in the upcoming mission.

2b. Based on your above answer, how certain are you?

3a. I believe that our taskforce can successfully exchange all intelligence required to neutralize enemies in the upcoming mission.

3b. Based on your above answer, how certain are you?

4a. I believe that our taskforce can successfully move the convoy through the war-torn region without causing it damage in the upcoming mission.

4b. Based on your above answer, how certain are you?

5a. I believe that our taskforce can finish the upcoming mission.

5b. Based on your above answer, how certain are you?

6a. I believe that our taskforce can neutralize all hotspots in the upcoming mission.

6b. Based on your above answer, how certain are you?

7a. I believe that our taskforce can exchange all intelligence required to neutralize enemies in the upcoming mission.

7b. Based on your above answer, how certain are you?

Table 4: Multiteam Efficacy

8a. I believe that our taskforce can successfully move the convoy through the war torn region without causing it damage in the upcoming mission.
8b. Based on your above answer, how certain are you?

Note. For scales the Task Efficacy scale, the response scale was 1 = 0%, 2 = 25%, 3 = 50%, 4 = 75%, and 5= 100%.For the Taskforce Collective Efficacy (Chen et al., Team-Based), and Taskforce Collective Efficacy (Chen et al., Multiteam System-Based) the Response Scale was: 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, and 5 = Strongly Agree. For the Bandura scalea the response scale was Yes/No and for the Bandura scale b the response scalewas a percentage provided by the participant from 0-100.

Table 5: Trust

1. The other team will keep our team in mind when performing the mission.
2. I would be willing to let the other team have complete control over our team's decisions in the upcoming mission.
3. If the other team asked why a problem occurred during the mission, I would tell them even if I were partly to blame.
4. I feel comfortable taking risks in the mission knowing that even if we fail, the other team will support our decision.
5. It is important for my team to keep an eye on what the other team is doing.
6. Increasing my team's vulnerability to the other team would be a mistake.
7. If I had my way, I wouldn't let the other team influence our task force.

Note. Response Scale: 1 = Completely Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, and 5 = Completely Agree

Table 6: Information Sharing Psychometric Scale Items

Information Sharing Uniqueness
Between Teams: Information exchanged between team members on distinct teams that was initially distributed across all four taskforce members.
Within Team: Information exchanged between team members of the same team that was initially distributed across the two team members.
Information Sharing Openness
The members of the other team:
Information used to make key decisions was freely shared among my team and the members of the other team.
The members of the other team worked hard to keep our team up to date on their activities.
The members of the other team were kept "in the loop" about key issues affecting the taskforce.
Information Sharing Commonly Held/Shared
Between Teams: Information exchanged between team members on distinct teams that was initially distributed to both taskforce members engaging in the communication exchange. In other words each taskforce member engaging in the exchange of information possessed the information prior the exchange taking place.
Within Team: Information exchanged between team members of the same team that was initially distributed to both team members engaging in the communication exchange. In other words the two team members possessed the information prior to the exchange taking place.

Note. Respond as honestly as possible, using the response scale provided. Response Scale: 1= Very Strongly Disagree, 2= Disagree
3= Neither Disagree or Agree, 4= Agree, and 5= Very Strongly Agree

Table 7: Transactive Memory Systems -Psychometric Scale

Specialization
1. Each member of the taskforce has specialized knowledge of some aspect of our task.
2. I have knowledge about an aspect of the task that no other member of the taskforce has.
3. Different members of the taskforce are responsible for expertise in different areas.
4. The specialized knowledge of several different members of the taskforce is needed to complete the task.
5. I know which members of the taskforce have expertise in specific areas.
Credibility
1. I am comfortable accepting procedural suggestions from other members of the taskforce.
2. I trust that task knowledge of the other members is credible.
3. I am confident relying on the information that members of the taskforce brought to the discussion.
4. When other members of the taskforce give information, I want to double-check it for myself.
5. I do not have much faith in other members of the taskforce's "expertise."

Note. Please answer the following question using the scale provided. Response Scale: 1 = Completely Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, and 5 = Completely Agree

Table 8: Shared Mental Models

Multiteam Goal Shared Mental Model
Locating CI targets (Civilians, etc.) and threats (AFVs, etc.)
Locating OD targets and threats
Neutralizing Insurgents
Disarming IEDs
Clearing hotspots in Kazbar
Advancing the Executive Convoy
Multiteam Task Shared Mental Model
Clearing Insurgent hotspots
Sharing intelligence with the Stinger team
Communicating with the Stinger team about the mission status
Assisting the Stinger team in completing their goals
Clearing IED/Counter Insurgent hotspots
Multiteam Team Shared Mental Model
Obtaining Intelligence
Sharing Intelligence with your teammate
Updating the strategic map
Communicating with your team mate about the mission status
Reporting the locations of threats and targets
Requesting engagement authorization
Clearing hotspots of enemy threats

Note. Within each of the boxes not marked with a slash, please enter a number 1 through 5 indicating the extent to which the item directly above and the item directly to the left are related. The numbers indicate the following levels of relationships:1 = Minimal or no relationship, 2 = Weakly related, 3 = Moderately related, 4 = Somewhat strongly related, and 5 = Very strongly related.

Table 9: Performance Indices

Multiteam System Efficiency
The amount of time it took the humanitarian aid convoy to travel to its final destination.
Multiteam System Effectiveness
While neutralizing the war torn region did the MTS follow the Rules of Engagement. 1) All threats in a cell were reported 2) Threat within a cell is correctly neutralized 3) Convoy travels safely through the cell

Note. These indices were task derived

Table 10: Controls

Gaming Related Questions
If yes, how frequently do you play video games? *(Please circle one)*
Have you played video games in the past 5 years?
Virtual Communication Related Questions
How confident are you in using Skype?
How often do you use messenger (e.g., Facebook chat, GChat, AIM, and others) every day?

Note. For the gaming questions the response scale was 1 = *Only once or twice in the last 5 years*, 2 = *A few times per year*, 3 = *A few times per month*, 4 = *A few times per week*, 5 = *Daily. For the virtual communication related questions the response scale was* 1= *not at all*, 2 = *very little*, 3 = *to some extent*, 4 = *to a great extent*, and 5 = to a very great extent.

Table 11: Zero Order Correlations between Control Variables and Study Variables

	PCVidPlay	VidPlay	Skype	Iming
TaskEfficacy	-.29**	.34**	.11	.19
TeamEfficacy	-.30**	.18	.01	-.01
Trust4T1	-.10	.18	.02	-.05
TMS	-.37**	.25*	.10	.25*
Multiteam Goal SMM	-.06	.21	-.10	.20
Multiteam Task SMM	-.09	.25*	-.17	-.04
Multiteam Team SMM	.04	.04	.12	.10
IS Uniqueness Between Team	-.12	.09	.08	.10
IS Uniqueness Within Team	-.08	.23*	-.02	.06
IS Commonly Held Between Teams	.09	-.04	.09	.02
IS commonly Held Within Team	-.02	.07	-.03	.06
IS Open	-.20	.16	-.02	.25*
Media Rich	.02	.09	.09	.35*
Media Retrievability Social	-.20	.07	-.01	-.09
Media Retrievability Task	-.14	.08	-.19	-.05
Media Retrievability Social and Task Aggregate	-.14	.09	-.19	-.05
Multiteam Efficiency	-.26*	.35**	-.03	.29**
Multiteam Effectiveness	-.34**	.33**	-.07	.16

Note. $N = 82$, † = $p<.10$, * = $p<.05$; ** = $p<.01$

Table 12: Analyses Regressing MTS IS Uniqueness on MTS Efficacy

Hypothesis 1											
Step 1						Step 2					
Model	Variable	b	F	R^2	ΔR^2	Model	Variable	b	F	R^2	ΔR^2
DV = MTS IS Uniqueness Between Teams											
1	AvgPC&VidPPlay	.04	.50	.01	-	1	AvgPC&VidPPlay	.04	.33	.01	.00
	Iming	.10					Iming	.10			
							MTS Task Efficacy	.00			
	N = 82										
2	AvgPC&VidPPlay	.04	.50	.01	-	2	AvgPC&VidPPlay	.04	.33	.01	.00
	Iming	.10					Iming	.10			
							MTS Taskforce Efficacy-tm	.02			
	N = 82										
3	AvgPC&VidPPlay	.04	.50	.01	-	3	AvgPC&VidPPlay	.02	.53	.02	.01
	Iming	.10					Iming	.08			
							MTS Taskforce Efficacy	.09			
	N = 82										

Hypothesis 1

Step 1						Step 2					
Model	Variable	b	F	R^2	ΔR^2	Model	Variable	b	F	R^2	ΔR^2
DV = MTS IS Uniqueness Between Teams											
4	AvgPC&VidPPlay	.04	.50	.01	-	4	AvgPC&VidPPlay	.04	.36	.01	.0
	Iming	.10					Iming	.09			
							MTS Bandura Percent	.04			
	N = 82										
5	AvgPC&VidPPlay	.04	.50	.01	-	5	AvgPC&VidPPlay	.05	.68	.03	.02
	Iming	.10					Iming	.07			
							MTS Bandura Y/N	.12			
	N = 82										
DV = MTS IS Uniqueness Within Team											
6	AvgPC&VidPPlay	.22*	2.11	.05	-	6	AvgPC&VidPPlay	.20†	2.03	.07	.02
	Iming	.03					Iming	.03			
	N = 82						MTS Task Efficacy	.15			

Hypothesis 1

Step 1						Step 2					
Model	Variable	b	F	R^2	ΔR^2	Model	Variable	b	F	R^2	ΔR^2
DV = MTS IS Uniqueness Within Team											
7	AvgPC&VidPPlay	.22*	2.11	.05	-	7	AvgPC&VidPPlay	.20†	2.06	.07	.02
	Iming	.03					Iming	.03			
							MTS Taskforce Efficacy-tm	.15			
	N = 82										
8	AvgPC&VidPPlay	.22*	2.11	.05	-	8	AvgPC&VidPPlay	.20†	1.64	.06	.01
	Iming	.03					Iming	.01			
							MTS Taskforce Efficacy	.10			
	N = 82										
9	AvgPC&VidPPlay	.22*	2.11	.05	-	9	AvgPC&VidPPlay	.21†	1.72	.06	.01
	Iming	.03					Iming	.01			
							MTS Bandura Percent	.11			
	N = 82										

Hypothesis 1

Step 1						Step 2					
Model	Variable	b	F	R^2	ΔR^2	Model	Variable	b	F	R^2	ΔR^2
DV = MTS IS Uniqueness Within Team											
10	AvgPC&VidPPlay	.22*	2.11	.05	-	10	AvgPC&VidPPlay	.22†	1.40	.05	.00
	Iming	.03					Iming	.03			
							MTS Bandura Y/N	-.02			
	N = 82										

Note. † = $p<.10$, * = $p<.05$; ** = $p<.01$

Table 13: Analyses Regressing MTS Performance on MTS IS Uniqueness

Hypothesis 2

Step 1						Step 2					
Model	Variable	b	F	R^2	ΔR^2	Model	Variable	b	F	R^2	ΔR^2
DV = MTS Efficiency											
11	AvgPC&VidPPlay	.25*	6.76	.15**	-	11	AvgPC&VidPPlay	.24*	5.93	.18†	.03†
	Iming	.25*					Iming	.23*			
							MTS IS Uniqueness Between Teams	.20†			
	N = 82										
12	AvgPC&VidPPlay	.25*	6.76	.15**	-	12	AvgPC&VidPPlay	.22*	5.43	.17	.02
	Iming	.25*					Iming	.24*			
							MTS IS Uniqueness Within Team	.17			
	N = 82										
DV = MTS Effectiveness											
13	AvgPC&VidPPlay	.22*	3.18	.07*	-	13	AvgPC&VidPPlay	.21*	3.86	.13*	.06*
	Iming	.13					Iming	.10			
							MTS IS Uniqueness Between Teams	.23*			
	N = 82										

Hypothesis 2

Step 1						Step 1					
Model	Variable	b	F	R^2	ΔR^2	Model	Variable	b	F	R^2	ΔR^2
DV= MTS Effectiveness											
14	AvgPC&VidPPlay	.22*	3.18	.07*	-	14	AvgPC&VidPPlay	.17	3.54	.12*	.05*
	Iming	.13					Iming	.12			
							MTS IS				
							Uniqueness				
							Within Team	.22*			
	N = 82										

Note. † = p<.10, * = p<.05; ** = p<.01

Table 14: Mediator Analyses: The MTS IS and MTS Performance Relationship Mediated by MTS TMS

Hypothesis 3

				Bootstrap Coefficients	
Model		Coefficient	SE	Lower 95% BCa	Upper 95% BCa
DV= MTS Efficiency					
15	Path A	-.02	.11		
	Path B	2.51†	1.30		
	TOTAL EFFECT MTS IS Uniqueness Between Teams	2.50†	1.28		
	DIRECT EFFECT	2.55*	1.26		
	INDIRECT EFFECT MTS TMS	-.06	.31	-.79	.48
	N = 82				
16	Path A	.00	.11		
	Path B	2.52†	1.31		
	TOTAL EFFECT MTS IS Uniqueness Within Team	2.09	1.32		
	DIRECT EFFECT	2.16†	1.30		
	INDIRECT EFFECT MTS TMS	-.07	.35	-.94	.51
	N = 82				

Hypothesis 3

Model		Coefficient	SE	Bootstrap Coefficients	
				Lower 95% BCa	Upper 95% BCa
DV= MTS Effectiveness					
17	Path A	-.03	.11		
	Path B	.85**	.31		
	TOTAL EFFECT MTS IS Uniqueness Between Teams	.68*	.31		
	DIRECT EFFECT	.70*	.30		
	INDIRECT EFFECT MTS TMS	-.02	.10	-.23	.17
	N = 82				
18	Path A	-.03	.11		
	Path B	.85**	.31		
	TOTAL EFFECT MTS IS Uniqueness Within Team	.63*	.32		
	DIRECT EFFECT	.66*	.30		
	INDIRECT EFFECT MTS TMS	-.02	.10	-.27	.16
	N = 82				

Note. † = p<.10, * = p<.05; ** = p<.01; Path A = IV→Mediator and Path B = Mediator →DV

Table 15: Analyses Regressing MTS IS Openness on MTS Trust

Hypothesis 4											
DV = MTS IS Openness											
Step 1							Step 2				
Model	Variable	b	F	R^2	ΔR^2	Model	Variable	b	F	R^2	ΔR^2
19	AvgPC&VidPPlay	.07	2.86	.07†	-	19	AvgPC&VidPPlay	.00	6.91	.21**	.14**
	Iming	.24*					Iming	.27**			
							MTS Trust	.38**			
	N = 82										

Note. † = *p*<.10, * = *p*<.05; ** = *p*<.01

Table 16: Analyses Regressing MTS Performance on MTS IS Openness

Hypothesis 5											
Step 1						Step 2					
Model	Variable	b	F	R^2	ΔR^2	Model	Variable	b	F	R^2	ΔR^2
DV = MTS Efficiency											
20	AvgPC&VidPPlay	.25*	6.76	.15**	-	20	AvgPC&VidPPlay	.23*	8.07	.24**	.09**
	Iming	.25*					Iming	.17†			
							MTS ISOpenness	.31**			
	N = 82										
DV = MTS Effectiveness											
21	AvgPC&VidPPlay	.22*	3.18	.07*	-	21	AvgPC&VidPPlay	.20†	5.98	.19**	.12**
	Iming	.13					Iming	.04			
							MTS ISOpenness	.35**			
	N = 82										

Note. † = p<.10, * = p<.05; ** = p<.01

Table 17: Mediator Analyses: The MTS IS Openness and MTS Performance Relationship Mediated by MTS SMM

Hypothesis 6

Model		Coefficient	SE	Bootstrap Coefficients	
				Lower 95% BCa	Upper 95% BCa
DV= MTS Efficiency					
22	Path A	.24*	.12		
	Path B	.57	1.49		
	TOTAL EFFECT MTS IS Open	3.71*	1.48		
	DIRECT EFFECT	3.57*	1.54		
	INDIRECT EFFECT MTS Goal SMM	.14	.43	-.47	1.26
	N = 70				
23	Path A	.36**	.11		
	Path B	.22	1.53		
	TOTAL EFFECT MTS IS Open	3.88**	1.39		
	DIRECT EFFECT	3.80**	1.51		
	INDIRECT EFFECT MTS Task SMM	.08	.55	-1.04	.98
	N = 68				

Hypothesis 6

Model		Coefficient	SE	Bootstrap Coefficients	
				Lower 95% BCa	Upper 95% BCa
DV= MTS Efficiency					
24	Path A	-.13	.15		
	Path B	-1.22	1.45		
	TOTAL EFFECT MTS IS Open	5.07**	1.66		
	DIRECT EFFECT	4.91**	1.67		
	INDIRECT EFFECT MTS Team SMM	.17	.44	-.22	2.18
	N = 61				
DV= MTS Effectiveness					
25	Path A	.24*	.12		
	Path B	-.19	.34		
	TOTAL EFFECT MTS IS Open	1.14**	.34		
	DIRECT EFFECT	1.18**	.35		
	INDIRECT EFFECT MTS Goal SMM	-.05	.10	-.29	.10
	N = 70				

Hypothesis 6

Model		Coefficient	SE	Bootstrap Coefficients	
				Lower 95% BCa	Upper 95% BCa
DV= MTS Effectiveness					
26	Path A	.36**	.11		
	Path B	.36	.36		
	TOTAL EFFECT MTS IS Open	1.16**	.33		
	DIRECT EFFECT	1.03**	.35		
	INDIRECT EFFECT MTS Task SMM	.13	.13	-.11	.39
	N = 68				
27	Path A	-.13	.15		
	Path B	-.37	.34		
	TOTAL EFFECT MTS IS Open	.97*	.40		
	DIRECT EFFECT	.92	.40		
	INDIRECT EFFECT MTS Team SMM	.05	.10	-.05	.42
	N = 61				

Note. † = $p<.10$, * = $p<.05$; ** = $p<.01$; Path A = IV→Mediator and Path B = Mediator →DV

Table 18: Moderator Analyses: The MTS IS Uniqueness and MTS Cognition Relationship Moderated by Media Retrievability

Hypothesis 7											
Step 1						Step 2					
Model	Variable	b	F	R^2	ΔR^2	Model	Variable	b	F	R^2	ΔR^2
DV = MTS TMS											
28	AvgPC&VidPPlay	.14	2.07	.10†	-	28	AvgPC&VidPPlay	.14	1.66	.10	.0
	Iming	.26*					Iming	.26*			
	MTS IS Uniqueness Between Teams	-.01					MTS IS Uniqueness Between Teams	-.01			
	Media Retrievability Social	.03					Media Retrievability Social	.10			
							Interaction Term	-.08			
	N = 78										

Hypothesis 7											
Step 1						Step 2					
Model	Variable	b	F	R^2	ΔR^2	Model	Variable	b	F	R^2	ΔR^2
DV = MTS TMS											
29	AvgPC&VidPPlay	.15	2.09	.10†	-	29	AvgPC&VidPPlay	.19	2.07	.12	.02
	Iming	.26*					Iming	.25*			
	MTS IS Uniqueness Within Team	-.02					MTS IS Uniqueness Within Team	-.08			
	Media Retrievability Social	.03					Media Retrievability Social	.36			
							Interaction Term	-.36			
	N = 78										
30	AvgPC&VidPPlay	.15	2.16	.11†	-	30	AvgPC&VidPPlay	.15	1.81	.11	.0
	Iming	.26*					Iming	.25*			
	MTS IS Uniqueness Between Teams	-.00					MTS IS Uniqueness Between Teams	-.02			
	Media Retrievability Task	-.07					Media Retrievability Task	-.07			
							Interaction Term	-.08			
	N = 78										

Hypothesis 7											
Step 1						Step 2					
Model	Variable	b	F	R^2	ΔR^2	Model	Variable	b	F	R^2	ΔR^2
DV = MTS TMS											
31	AvgPC&VidPPlay	.15	2.17	.11†	-	31	AvgPC&VidPPlay	.17	2.80	.16*	.05*
	Iming	.26*					Iming	.26*			
	MTS IS Uniqueness Within Team	-.02					MTS IS Uniqueness Within Team	-.04			
	Media Retrievability Task	-.07					Media Retrievability Task	-.03			
							Interaction Term	-.24*			
	N = 78										
32	AvgPC&VidPPlay	.12	1.74	.08	-	32	AvgPC&VidPPlay	.12	1.43	.09	.01
	Iming	.22*					Iming	.22*			
	MTS IS Uniqueness Between Teams	-.02					MTS IS Uniqueness Between Teams	.01			
	Media Retrievability Aggregate	-.09					Media Retrievability Aggregate	-.10			
	N = 82						Interaction Term	-.07			

Hypothesis 7											
Step 1						Step 2					
Model	Variable	b	F	R^2	ΔR^2	Model	Variable	b	F	R^2	ΔR^2
DV = MTS TMS											
33	AvgPC&VidPPlay	.12	1.74	.08	-	33	AvgPC&VidPPlay	.14	2.23	.13*	.05*
	Iming	.22*					Iming	.23*			
	MTS IS Uniqueness Within Team	-.02					MTS IS Uniqueness Within Team	.08			
	Media Retrievability Aggregate	-.09					Media Retrievability Aggregate	-.05			
							Interaction Term	-.24*			
	N = 82										

Note. † = *p*<.10, * = *p*<.05; ** = *p*<.01

Table 19: Moderator Analyses: The MTS IS Openness and MTS SMM Relationship Moderated by Media Richness

Hypothesis 8											
Step 1						Step 2					
Model	Variable	b	F	R^2	ΔR^2	Model	Variable	b	F	R^2	ΔR^2
DV = MTS Goal SMM											
34	AvgPC&VidPPlay	.15	2.46	.16†	-	34	AvgPC&VidPPlay	.19	2.82	.22†	.06†
	Iming	.24†					Iming	.14			
	MTS ISOpenness	.06					MTS ISOpenness	.05			
	Media Richness	.16					Media Richness	.16			
							Interaction Term	-.26†			
	N = 55										

Hypothesis 8											
Step 1						Step 2					
Model	Variable	b	F	R^2	ΔR^2	Model	Variable	b	F	R^2	ΔR^2
DV = MTS Task SMM											
35	AvgPC&VidPPlay	.21	3.19	.20*	-	35	AvgPC&VidPPlay	.24†	2.80	.22	.02
	Iming	-.22					Iming	-.27†			
	MTS ISOpenness	.39**					MTS ISOpenness	.36**			
	Media Richness	.01					Media Richness	.03			
							Interaction Term	-.15			
	N = 54										
DV = MTS Team SMM											
36	AvgPC&VidPPlay	-.12	1.35	.11	-	36	AvgPC&VidPPlay	-.13	1.09	.11	.0
	Iming	.11					Iming	.12			
	MTS ISOpenness	-.28†					MTS ISOpenness	-.26			
	Media Richness	.19					Media Richness	.18			
							Interaction Term	.06			
	N = 49										

Note. † = p<.10, * = p<.05; ** = p<.01

Table 20: Analyses Regressing MTS IS Openness on MTS Efficacy

Step 1						Step 2					
Model	Variable	b	F	R^2	ΔR^2	Model	Variable	b	F	R^2	ΔR^2
DV = MTS IS Openness											
37	AvgPC&VidPPlay	.07	2.86	.07†	-	37	AvgPC&VidPPlay	-.06	8.33	.29**	.22**
	Iming	.24*					Iming	.17†			
							MTS TaskEfficacy	.50**			
	N = 82										
38	AvgPC&VidPPlay	.07	2.86	.07†	-	38	AvgPC&VidPPlay	.02	10.39	.28**	.21**
	Iming	.24*					Iming	.25**			
							MTS Taskforce Efficacy-tm	.47**			
	N = 82										
39	AvgPC&VidPPlay	.07	2.86	.07†	-	39	AvgPC&VidPPlay	-.00	10.88	.24**	.18**
	Iming	.24*					Iming	.24*			
							MTS Taskforce Efficacy	.42**			
	N = 82										

Step 1						Step 2					
Model	Variable	b	F	R^2	ΔR^2	Model	Variable	b	F	R^2	ΔR^2
DV = MTS IS Openness											
40	AvgPC&VidPPlay	.07	2.86	.07†	-	40	AvgPC&VidPPlay	.04	4.08	.13*	.06*
	Iming	.24*					Iming	.21*			
							MTS Bandura Percent	.26*			
	N = 82										
41	AvgPC&VidPPlay	.07	2.86	.07†	-	41	AvgPC&VidPPlay	.07	2.28	.08	.02
	Iming	.24*					Iming	.22†			
							MTS Bandura Y/N	.12			
	N = 82										

Note. † = $p<.10$, * = $p<.05$; ** = $p<.01$

Table 21: Mediator Analysis: The MTS IS Openness and MTS Performance Relationship Mediated by MTS TMS

				Bootstrap Coefficients	
Model		Coefficient	SE	Lower 95% BCa	Upper 95% BCa
DV= MTS Efficiency					
42	Path A	.55**	.09		
	Path B	.45	1.54		
	TOTAL EFFECT MTS IS Open	3.90**	1.28		
	DIRECT EFFECT	3.65*	1.54		
	INDIRECT EFFECT MTS TMS	.24	.89	-1.53	2.08
	N = 82				
DV= MTS Effectiveness					
43	Path A	.55**	.09		
	Path B	.40	.37		
	TOTAL EFFECT MTS IS Open	1.01**	.31		
	DIRECT EFFECT	.79*	.37		
	INDIRECT EFFECT MTS TMS	.22	.19	-.12	.63
	N = 82				

Note. † = p<.10, * = p<.05; ** = p<.01; Path A = IV→Mediator and Path B = Mediator →DV

Table 22: Analyses Regressing MTS IS Uniqueness on MTS Trust

Step 1						Step 2					
Model	Variable	b	F	R^2	ΔR^2	Model	Variable	b	F	R^2	ΔR^2
DV = MTS IS Uniqueness Between Teams											
44	AvgPC&VidPPlay	.04	.50	.01	-	44	AvgPC&VidPPlay	.03	.48	.02	.01
	Iming	.10					Iming	.10			
							MTS Trust	.08			
	N = 82										
DV = MTS IS Uniqueness Within Team											
45	AvgPC&VidPPlay	.22*	2.11	.05	-	45	AvgPC&VidPPlay	.21†	1.49	.05	.0
	Iming	.03					Iming	.03			
							MTS Trust	.06			
	N = 82										

Note. † = p<.10, * = p<.05; ** = p<.01

Table 23: Mediator Analyses: The MTS IS Uniqueness and MTS Performance Relationship Mediated by MTS SMM

				Bootstrap Coefficients	
Model		Coefficient	SE	Lower 95% BCa	Upper 95% BCa
DV= MTS Efficiency					
46	Path A	.06	.12		
	Path B	1.21	1.47		
	TOTAL EFFECT MTS IS Uniqueness Between Teams	2.89*	1.42		
	DIRECT EFFECT	2.82*	1.43		
	INDIRECT EFFECT MTS Goal SMM	.07	.29	-.20	1.13
	N = 70				
47	Path A	-.04	.12		
	Path B	1.47	1.49		
	TOTAL EFFECT MTS IS Uniqueness Within Team	1.85	1.44		
	DIRECT EFFECT	1.91	1.44		
	INDIRECT EFFECT MTS Goal SMM	-.06	.26	-.94	.30
	N = 70				

				Bootstrap Coefficients	
Model		Coefficient	SE	Lower 95% BCa	Upper 95% BCa
DV= MTS Efficiency					
48	Path A	.26*	.12		
	Path B	.83	1.50		
	TOTAL EFFECT MTS IS Uniqueness Between Teams	3.20*	1.43		
	DIRECT EFFECT	2.98*	1.49		
	INDIRECT EFFECT MTS Task SMM	.22	.43	-.40	1.42
	N = 68				
49	Path A	.22†	.12		
	Path B	1.14	1.47		
	TOTAL EFFECT MTS IS Uniqueness Within Team	2.99*	1.45		
	DIRECT EFFECT	2.79†	1.47		
	INDIRECT EFFECT MTS Task SMM	.25	.43	-.21	1.43
	N = 68				

		Coefficient	SE	Bootstrap Coefficients	
Model				Lower 95% BCa	Upper 95% BCa
DV= MTS Efficiency					
50	Path A	.05	.13		
	Path B	-1.85	1.47		
	TOTAL EFFECT	3.26*	1.43		
	MTS IS Uniqueness Between Teams				
	DIRECT EFFECT	3.33*	1.43		
	INDIRECT EFFECT MTS Team SMM	-.09	.38	-1.26	.33
	N = 61				
51	Path A	-.07	.12		
	Path B	-1.50	1.51		
	TOTAL EFFECT	2.56	1.49		
	MTS IS Uniqueness Within Team				
	DIRECT EFFECT	2.42	1.50		
	INDIRECT EFFECT MTS Team SMM	.11	.34	-.19	1.72
	N = 61				

				Bootstrap Coefficients	
Model		Coefficient	SE	Lower 95% BCa	Upper 95% BCa
DV= MTS Effectiveness					
52	Path A	.10	.12		
	Path B	.03	.35		
	TOTAL EFFECT	.77*	.34		
	MTS IS Uniqueness Between Teams				
	DIRECT EFFECT	.76*	.34		
	INDIRECT EFFECT MTS Goal SMM	.00	.06	-.09	.19
	N = 70				
53	Path A	.01	.12		
	Path B	.10	.35		
	TOTAL EFFECT	.56	.34		
	MTS IS Uniqueness Within Team				
	DIRECT EFFECT	.00	.04		
	INDIRECT EFFECT MTS Goal SMM	.00	.04	-.06	.12
	N = 70				

				Bootstrap Coefficients	
Model		Coefficient	SE	Lower 95% BCa	Upper 95% BCa
DV= MTS Effectiveness					
54	Path A	.27*	.12		
	Path B	.53	.35		
	TOTAL EFFECT	.93	.34		
	MTS IS Uniqueness Between Teams				
	DIRECT EFFECT	.79	.35		
	INDIRECT EFFECT MTS Task SMM	.14	.12	-.01	.49
	N = 68				
55	Path A	.22†	.12		
	Path B	.60†	.34		
	TOTAL EFFECT	.95**	.34		
	MTS IS Uniqueness Within Team				
	DIRECT EFFECT	.84*	.34		
	INDIRECT EFFECT MTS Task SMM	.13	.11	-.01	.43
	N = 68				

				Bootstrap Coefficients	
Model		Coefficient	SE	Lower 95% BCa	Upper 95% BCa
DV= MTS Effectiveness					
56	Path A	.05	.12		
	Path B	-.49	.34		
	TOTAL EFFECT	.71*	.34		
	MTS IS Uniqueness Between Teams				
	DIRECT EFFECT	.73*	.33		
	INDIRECT EFFECT MTS Team SMM	-.02	.08	-.25	.09
	N = 61				
57	Path A	-.07	.12		
	Path B	-.42	.35		
	TOTAL EFFECT	.55	.35		
	MTS IS Uniqueness Within Team				
	DIRECT EFFECT	.51	.35		
	INDIRECT EFFECT MTS Team SMM	.03	.08	-.05	.34
	N = 61				

Note. † = $p<.10$, * = $p<.05$; ** = $p<.01$; Path A = IV→Mediator and Path B = Mediator →DV

Table 24: Moderator Analyses: The MTS IS Uniqueness and MTS SMM Relationship Moderated by Media Retrievability

Step 1						Step 2					
Model	Variable	b	F	R^2	ΔR^2	Model	Variable	b	F	R^2	ΔR^2
DV = MTS Goal SMM											
58	AvgPC&VidPPlay	.20†	1.81	.10	-	58	AvgPC&VidPPlay	.20	1.49	.11	.01
	Iming	.17					Iming	.18			
	MTS IS Uniqueness Between Teams	-.04					MTS IS Uniqueness Between Teams	-.05			
	Media Retrievability Social	.19					Media Retrievability Social	.05			
							Interaction Term	.15			
	N = 66										

Step 1						Step 2					
Model	Variable	b	F	R^2	ΔR^2	Model	Variable	b	F	R^2	ΔR^2
DV = MTS Goal SMM											
59	AvgPC&VidPPlay	.23†	2.13	.12†	-	59	AvgPC&VidPPlay	.22†	1.71	.12	.0
	Iming	.17					Iming	.17			
	MTS IS Uniqueness Within Team	-.14					MTS IS Uniqueness Within Team	-.13			
	Media Retrievability Social	.20					Media Retrievability Social	.10			
							Interaction Term	.11			
	N = 66										
60	AvgPC&VidPPlay	.20	1.20	.07	-	60	AvgPC&VidPPlay	.20	.96	.07	.0
	Iming	.15					Iming	.15			
	MTS IS Uniqueness Between Teams	.00					MTS IS Uniqueness Between Teams	.01			
	Media Retrievability Task	.04					Media Retrievability Task	.04			
							Interaction Term	.03			
	N = 66										

Step 1						Step 2					
Model	Variable	b	F	R^2	ΔR^2	Model	Variable	b	F	R^2	ΔR^2
DV = MTS Goal SMM											
61	AvgPC&VidPPlay	.23†	1.43	.09	-	61	AvgPC&VidPPlay	.24†	1.38	.10	.01
	Iming	.15					Iming	.16			
	MTS IS Uniqueness Within Team	-.12					MTS IS Uniqueness Within Team	-.12			
	Media Retrievability Task	.04					Media Retrievability Task	.07			
							Interaction Term	-.13			
	N = 66										
62	AvgPC&VidPPlay	.18	1.37	.08	-	62	AvgPC&VidPPlay	.18	1.08	.08	.0
	Iming	.17					Iming	.17			
	MTS IS Uniqueness Between Teams	.06					MTS IS Uniqueness Between Teams	.05			
	Media Retrievability Aggregate	.02					Media Retrievability Aggregate	.02			
							Interaction Term	.01			
	N = 70										

Step 1						Step 2					
Model	Variable	b	F	R^2	ΔR^2	Model	Variable	b	F	R^2	ΔR^2
DV = MTS Goal SMM											
63	AvgPC&VidPPlay	.19	1.35	.08	-	63	AvgPC&VidPPlay	.20†	1.42	.10	.02
	Iming	.18					Iming	.18			
	MTS IS Uniqueness Within Team	-.05					MTS IS Uniqueness Within Team	.03			
	Media Retrievability Aggregate	.02					Media Retrievability Aggregate	.05			
							Interaction Term	-.18			
	N = 70										
64	AvgPC&VidPPlay	.23†	2.32	.13†	-	64	AvgPC&VidPPlay	.23†	1.87	.14	.01
	Iming	-.10					Iming	-.11			
	MTS IS Uniqueness Between Teams	.28*					MTS IS Uniqueness Between Teams	.28*			
	Media Retrievability Social	-.08					Media Retrievability Social	.03			
							Interaction Term	-.12			
	N = 65										

Step 1						Step 2					
Model	Variable	b	F	R^2	ΔR^2	Model	Variable	b	F	R^2	ΔR^2
DV = MTS Task SMM											
65	AvgPC&VidPPlay	.20	1.94	.11	-	65	AvgPC&VidPPlay	.22†	1.69	.12	.01
	Iming	-.08					Iming	-.09			
	MTS IS Uniqueness Within Team	.24†					MTS IS Uniqueness Within Team	.21			
	Media Retrievability Social	-.05					Media Retrievability Social	.19			
							Interaction Term	-.26			
	N = 65										
66	AvgPC&VidPPlay	.24*	2.93	.16*	-	66	AvgPC&VidPPlay	.23*	4.12	.26**	.10**
	Iming	-.10					Iming	-.10			
	MTS IS Uniqueness Between Teams	.26*					MTS IS Uniqueness Between Teams	.25*			
	Media Retrievability Task	-.19					Media Retrievability Task	-.20†			
							Interaction Term	-.31**			
	N = 65										

Step 1						Step 2					
Model	Variable	b	F	R^2	ΔR^2	Model	Variable	b	F	R^2	ΔR^2
DV = MTS Task SMM											
67	AvgPC&VidPPlay	.20	2.72	.15*	-	67	AvgPC&VidPPlay	.22†	4.95	.29**	.14**
	Iming	-.08					Iming	-.07			
	MTS IS Uniqueness Within Team	.25*					MTS IS Uniqueness Within Team	.26*			
	Media Retrievability Task	-.20†					Media Retrievability Task	-.15			
							Interaction Term	-.38**			
	N = 65										
68	AvgPC&VidPPlay	.25*	3.11	.16*	-	68	AvgPC&VidPPlay	.25*	4.18	.25**	.09**
	Iming	-.12					Iming	-.13			
	MTS IS Uniqueness Between Teams	.26*					MTS IS Uniqueness Between Teams	.46**			
	Media Retrievability Aggregate	-.18					Media Retrievability Aggregate	-.19†			
							Interaction Term	-.35**			
	N = 68										

Step 1						Step 2					
Model	Variable	b	F	R^2	ΔR^2	Model	Variable	b	F	R^2	ΔR^2
DV = MTS Task SMM											
69	AvgPC&VidPPlay	.22†	2.35	.13†	-	69	AvgPC&VidPPlay	.25*	3.75	.23**	.20**
	Iming	-.10					Iming	-.09			
	MTS IS Uniqueness Within Team	.19					MTS IS Uniqueness Within Team	.36**			
	Media Retrievability Aggregate	-.19					Media Retrievability Aggregate	-.13			
							Interaction Term	-.37**			
	N = 68										

Step 1						Step 2					
Model	Variable	b	F	R^2	ΔR^2	Model	Variable	b	F	R^2	ΔR^2
DV = MTS Team SMM											
70	AvgPC&VidPPlay	.06	.17	.01	-	70	AvgPC&VidPPlay	.05	.16	.02	.01
	Iming	.08					Iming	.08			
	MTS IS Uniqueness Between Teams	-.01					MTS IS Uniqueness Between Teams	-.01			
	Media Retrievability Social	.05					Media Retrievability Social	-.06			
							Interaction Term	.12			
	N = 59										
71	AvgPC&VidPPlay	.09	.42	.03	-	71	AvgPC&VidPPlay	.10	.36	.03	.0
	Iming	.08					Iming	.07			
	MTS IS Uniqueness Within Team	-.14					MTS IS Uniqueness Within Team	-.15			
	Media Retrievability Social	.06					Media Retrievability Social	.18			
							Interaction Term	-.14			
	N = 59										

Step 1						Step 2					
Model	Variable	b	F	R^2	ΔR^2	Model	Variable	b	F	R^2	ΔR^2
DV = MTS Team SMM											
72	AvgPC&VidPPlay	.06	.16	.01	-	72	AvgPC&VidPPlay	.06	.13	.01	.0
	Iming	.07					Iming	.07			
	MTS IS Uniqueness Between Teams	.00					MTS IS Uniqueness Between Teams	.00			
	Media Retrievability Task	.04					Media Retrievability Task	.04			
							Interaction Term	.01			
	N = 59										
73	AvgPC&VidPPlay	.09	.42	.03	-	73	AvgPC&VidPPlay	.09	.34	.03	.0
	Iming	.07					Iming	.07			
	MTS IS Uniqueness Within Team	-.14					MTS IS Uniqueness Within Team	-.14			
	Media Retrievability Task	.06					Media Retrievability Task	.05			
							Interaction Term	.03			
	N = 59										

Step 1						Step 2					
Model	Variable	b	F	R^2	ΔR^2	Model	Variable	b	F	R^2	ΔR^2
DV = MTS Team SMM											
74	AvgPC&VidPPlay	.03	.20	.01	-	74	AvgPC&VidPPlay	.03	.16	.01	.0
	Iming	.09					Iming	.09			
	MTS IS Uniqueness Between Teams	.04					MTS IS Uniqueness Between Teams	.04			
	Media Retrievability Aggregate	.02					Media Retrievability Aggregate	.02			
							Interaction Term	-.01			
	N = 61										
75	AvgPC&VidPPlay	.06	.30	.02	-	75	AvgPC&VidPPlay	.06	.24	.02	.0
	Iming	.10					Iming	.10			
	MTS IS Uniqueness Within Team	-.10					MTS IS Uniqueness Within Team	-.10			
	Media Retrievability Aggregate	.03					Media Retrievability Aggregate	.03			
							Interaction Term	.01			

N = 61

Note. † = *p*<.10, * = *p*<.05; ** = *p*<.01

Table 25: Moderator Analyses: The IS Openness and MTS TMS Relationship Moderated by Media Retrievability

Step 1						Step 2					
Model	Variable	b	F	R^2	ΔR^2	Model	Variable	b	F	R^2	ΔR^2
DV = MTS TMS											
76	AvgPC&VidPPlay	.10	11.72	.39**	-	76	AvgPC&VidPPlay	.11	9.50	.39	.0
	Iming	.12					Iming	.13			
	MTS ISOpenness	.56**					MTS ISOpenness	.55**			
	Media Retrievability Social	-.07					Media Retrievability Social	.07			
							Interaction Term	-.16			
	N = 78										
77	AvgPC&VidPPlay	.10	11.66	.39**	-	77	AvgPC&VidPPlay	.09	9.35	.39	.0
	Iming	.13					Iming	.12			
	MTS ISOpenness	.55**					MTS ISOpenness	.56**			
	Media Retrievability Task	-.06					Media Retrievability Task	-.05			
							Interaction Term	.06			

N = 78

Step 1						Step 2					
Model	Variable	b	F	R^2	ΔR^2	Model	Variable	b	F	R^2	ΔR^2
DV = MTS TMS											
78	AvgPC&VidPPlay	.08	10.80	.36**	-	78	AvgPC&VidPPlay	.07	8.69	.36	.0
	Iming	.09					Iming	.08			
	MTS ISOpenness	.54**					MTS ISOpenness	.51**			
	Media Retrievability Aggregate	-.08					Media Retrievability Aggregate	-.07			
							Interaction Term	.08			
	N = 82										

Note. † = *p*<.10, * = *p*<.05; ** = *p*<.01

Table 26: Moderator Analysis: The MTS IS Openness and MTS SMM Relationship Moderated by Media Retrievability

Step 1						Step 2					
Model	Variable	b	F	R^2	ΔR^2	Model	Variable	b	F	R^2	ΔR^2
DV = MTS Goal SMM											
79	AvgPC&VidPPlay	.19	2.26	.13†	-	79	AvgPC&VidPPlay	.16	2.05	.14	.01
	Iming	.12					Iming	.12			
	MTS ISOpenness	.17					MTS ISOpenness	.18			
	Media Retrievability Social	.14					Media Retrievability Social	-.09			
							Interaction Term	.26			
	N = 66										
80	AvgPC&VidPPlay	.19	1.91	.11	-	80	AvgPC&VidPPlay	.16	2.01	.14	.03
	Iming	.11					Iming	.07			
	ISOpen	.20					ISOpen	.22†			
	Media Retrievability Task	.04					Media Retrievability Task	.07			
							Interaction Term	.19			
	N = 66										

Step 1						Step 2					
Model	Variable	b	F	R^2	ΔR^2	Model	Variable	b	F	R^2	ΔR^2
DV = MTS Goal SMM											
81	AvgPC&VidPPlay	.17	2.36	.13†	-	81	AvgPC&VidPPlay	.14	2.28	.15	.02
	Iming	.13					Iming	.10			
	MTS ISOpenness	.23*					MTS ISOpenness	.16			
	Media Retrievability Aggregate	.03					Media Retrievability Aggregate	.06			
							Interaction Term	.18			
	N = 70										
DV = MTS Task SMM											
82	AvgPC&VidPPlay	.22†	4.21	.22**	-	82	AvgPC&VidPPlay	.21†	3.36	.22	.00
	Iming	-.18					Iming	-.18			
	MTS ISOpenness	.42**					MTS ISOpenness	.43**			
	Media Retrievability Social	-.10					Media Retrievability Social	-.19			
							Interaction Term	.10			
	N = 65										

Step 1						Step 2					
Model	Variable	b	F	R^2	ΔR^2	Model	Variable	b	F	R^2	ΔR^2
DV = MTS Task SMM											
83	AvgPC&VidPPlay	.22†	4.72	.24**	-	83	AvgPC&VidPPlay	.24*	3.84	.24	.00
	Iming	-.17					Iming	-.16			
	MTS ISOpenness	.39**					MTS ISOpenness	.38**			
	Media Retrievability Task	-.17					Media Retrievability Task	-.19			
							Interaction Term	-.08			
	N = 65										
84	AvgPC&VidPPlay	.24*	4.43	.22**	-	84	AvgPC&VidPPlay	.25*	3.56	.22	.0
	Iming	-.19					Iming	-.18			
	MTS ISOpenness	.36**					MTS ISOpenness	.39**			
	Media Retrievability Aggregate	-.16					Media Retrievability Aggregate	-.17			
							Interaction Term	-.07			
	N = 68										

Step 1						Step 2					
Model	Variable	b	F	R^2	ΔR^2	Model	Variable	b	F	R^2	ΔR^2
DV = MTS Team SMM											
85	AvgPC&VidPPlay	.07	.57	.04	-	85	AvgPC&VidPPlay	.08	.50	.04	.00
	Iming	.13					Iming	.13			
	MTS IS Openness	-.18					MTS IS Openness	-.18			
	Media Retrievability Social	.08					Media Retrievability Social	.20			
							Interaction Term	-.14			
	N = 59										
86	AvgPC&VidPPlay	.08	.50	.04	-	86	AvgPC&VidPPlay	.08	.49	.04	.0
	Iming	.11					Iming	.13			
	MTS IS Openness	-.16					MTS IS Openness	-.17			
	Media Retrievability Task	.03					Media Retrievability Task	.02			
							Interaction Term	-.09			
	N = 59										

Step 1						Step 2					
Model	Variable	b	F	R^2	ΔR^2	Model	Variable	b	F	R^2	ΔR^2
DV = MTS Team SMM											
87	AvgPC&VidPPlay	.05	.37	.03	-	87	AvgPC&VidPPlay	.06	.43	.04	.01
	Iming	.13					Iming	.15			
	MTS IS Openness	-.12					MTS IS Openness	-.06			
	Media Retrievability Aggregate	.01					Media Retrievability Aggregate	.01			
							Interaction Term	-.13			
	N = 61										

Note. † = p<.10, * = p<.05; ** = p<.01

Table 27: Moderator Analyses: The MTS IS Openness and MTS TMS Relationship Moderated by Media Richness

Step 1						Step 2					
Model	Variable	b	*F*	R^2	ΔR^2	Model	Variable	b	F	R^2	ΔR^2
DV = MTS TMS											
88	AvgPC&VidPPlay	.07	8.82	.37**	-	88	AvgPC&VidPPlay	.07	6.96	.37	.0
	Iming	.22†					Iming	.23†			
	MTS ISOpenness	.51**					MTS IS Openness	.52**			
	Media Richness	-.07					Media Richness	-.08			
							Interaction Term	.03			
	N = 64										

Note. † = p<.10, * = p<.05; ** = p<.01

Table 28: Moderator Analyses: The MTS IS Uniqueness and MTS SMM Relationship Moderated by Media Richness

Step 1						Step 2					
Model	Variable	b	*F*	R^2	ΔR^2	Model	Variable	b	F	R^2	ΔR^2
DV = MTS Goal SMM											
89	AvgPC&VidPPlay	.16	2.46	.16†	-	89	AvgPC&VidPPlay	.16	2.05	.17	.01
	Iming	.26†					Iming	.23			
	MTS IS Uniqueness Between Teams	-.06					MTS IS Uniqueness Between Teams	-.06			
	Media Richness	.15					Media Richness	.18			
							Interaction Term	-.10			
	N = 55										
90	AvgPC&VidPPlay	.20	2.81	.18*	-	90	AvgPC&VidPPlay	.20	2.22	.18	.0
	Iming	.27†					Iming	.26†			
	MTS IS Uniqueness Within Team	-.15					MTS IS Uniqueness Within Team	-.16			
	Media Richness	.14					Media Richness	.14			
							Interaction Term	-.04			
	N = 55										

Step 1						Step 2					
Model	Variable	b	*F*	R^2	ΔR^2	Model	Variable	b	F	R^2	ΔR^2
DV = MTS Task SMM											
91	AvgPC&VidPPlay	.22	1.90	.13	-	91	AvgPC&VidPPlay	.21	1.62	.14	.01
	Iming	-.15					Iming	-.13			
	MTS IS Uniqueness Between Teams	.26†					MTS IS Uniqueness Between Teams	.28*			
	Media Richness	.09					Media Richness	.07			
							Interaction Term	.11			
	N = 54										
92	AvgPC&VidPPlay	.17	1.84	.13	-	92	AvgPC&VidPPlay	.15	1.48	.13	.0
	Iming	-.13					Iming	-.12			
	MTS IS Uniqueness Within Team	.26†					MTS IS Uniqueness Within Team	.28†			
	Media Richness	.09					Media Richness	.09			
							Interaction Term	.06			
	N = 54										

Step 1						Step 2					
Model	Variable	b	*F*	R^2	ΔR^2	Model	Variable	b	F	R^2	ΔR^2
DV = MTS Team SMM											
93	AvgPC&VidPPlay	-.14	.47	.04	-	93	AvgPC&VidPPlay	-.14	.49	.05	.01
	Iming	.03					Iming	.00			
	MTS IS Uniqueness Between Teams	.01					MTS IS Uniqueness Between Teams	-.02			
	Media Richness	.15					Media Richness	.16			
							Interaction Term	-.12			
	N = 49										
94	AvgPC&VidPPlay	-.11	.63	.05	-	94	AvgPC&VidPPlay	-.10	.51	.06	.01
	Iming	.03					Iming	.03			
	MTS IS Uniqueness Within Team	-.12					MTS IS Uniqueness Within Team	-.13			
	Media Richness	.14					Media Richness	.14			
							Interaction Term	-.05			
	N = 49										

Note. † = p<.10, * = p<.05; ** = p<.01

Table 29: Moderator Analyses: The MTS IS Uniqueness and MTS TMS Relationship Moderated by Media Richness

Step 1						Step 2					
Model	Variable	b	*F*	R^2	ΔR^2	Model	Variable	b	F	R^2	ΔR^2
DV = MTS TMS											
95	AvgPC&VidPPlay	.10	2.23†	.13	-	95	AvgPC&VidPPlay	.10	1.91	.14	.01
	Iming	.24**					Iming	.32*			
	MTS IS Uniqueness Between Teams	.03					MTS IS Uniqueness Between Teams	.02			
	Media Richness	-.03					Media Richness	-.01			
							Interaction Term	-.10			
	N = 64										
96	AvgPC&VidPPlay	.11	2.26	.13†	-	96	AvgPC&VidPPlay	.14	2.09	.15	.02
	Iming	.34**					Iming	.33**			
	MTS IS Uniqueness Within Team	-.05					MTS IS Uniqueness Within Team	-.06			
	Media Richness	-.03					Media Richness	-.02			
							Interaction Term	-.14			

N = 64

Note. † = $p<.10$, * = $p<.05$; ** = $p<.01$

Table 30: Lagged Correlation Analysis of MTS Behavior and MTS Cognition Relationship

	1	2	4	5	6
1. MTS IS Unique Between Team Time 1	-				
2. MTS IS Unique Within Team Time 1	-	-			
4. MTS TMS Time 2	.01	.01	-		
5. MTS Goal SMM Time 2	.10	.01	-	-	
6. MTS Task SMM Time 2	.26*	.22†	-	-	-
7. MTS Team SMM Time 2	.05	-.07	-	-	-

	1	2	4	5	6
1. MTS IS Unique Between Team Time 3	-				
2. MTS IS Unique Within Team Time 3	-	-			
4. MTS TMS Time 2	.20†	.10	-		
5. MTS Goal SMM Time 2	.16	.09	-	-	
6. MTS Task SMM Time 2	.34**	.31**	-	-	-
7. MTS Team SMM Time 2	.06	.05	-	-	-

Note. *N*= 61-82, * = p <.05; ** = p <.01

Table 31: Analyses Regressing MTS TMS on MTS Efficacy

Step 1						Step 2					
Model	Variable	b	F	R^2	ΔR^2	Model	Variable	b	F	R^2	ΔR^2
DV = MTS TMS											
97	AvgPC&VidPPlay	.11	3.14	.07*	-	97	AvgPC&VidPPlay	-.01	12.00	.31**	.24**
	Iming	.23*					Iming	.15			
							MTS TaskEfficacy	.51**			
	N = 82										
98	AvgPC&VidPPlay	.11	3.14	.07*	-	98	AvgPC&VidPPlay	.07	10.53	.29**	.22**
	Iming	.23*					Iming	.24*			
							MTS Taskforce Efficacy-tm	.46**			
	N = 82										
99	AvgPC&VidPPlay	.11	3.14	.07*	-	99	AvgPC&VidPPlay	.05	9.02	.26**	.19**
	Iming	.23*					Iming	.22*			
							MTS Taskforce Efficacy	.43**			
	N = 82										

Step 1						Step 2					
Model	Variable	b	F	R^2	ΔR^2	Model	Variable	b	F	R^2	ΔR^2
DV = MTS TMS											
100	AvgPC&VidPPlay	.11	3.14	.07*	-	100	AvgPC&VidPPlay	.08	7.29	.22**	.15**
	Iming	.23*					Iming	.18†			
							MTS Bandura Percent	.38**			
	N = 82										
101	AvgPC&VidPPlay	.11	3.14	.07*	-	101	AvgPC&VidPPlay	.11	2.07	.07	.00
	Iming	.23*					Iming	.23*			
							MTS Bandura Yes/No	.01			
	N = 82										

Note. † = p<.10, * = p<.05; ** = p<.01

Table 32:Analyses Regressing MTS Performance on MTS TMS

Step 1						Step 2					
Model	Variable	b	F	R^2	ΔR^2	Model	Variable	b	F	R^2	ΔR^2
DV = MTS Efficiency											
102	AvgPC&VidPPlay	.25*	6.76	.15**	-	102	AvgPC&VidPPlay	.23*	5.78	.18†	.03†
	Iming	.25*					Iming	.20†			
							MTS TMS	.20†			
	N = 82										
DV = MTS Effectiveness											
103	AvgPC&VidPPlay	.22*	3.18	.07*	-	103	AvgPC&VidPPlay	.19†	4.62	.15**	.08**
	Iming	.13					Iming	.06			
							MTS TMS	.29**			
	N = 82										

Note. † = $p<.10$, * = $p<.05$; ** = $p<.01$

Table 33: Mediator Analyses: The MTS TMS and MTS Performance Relationship Mediated by MTS IS Uniqueness

				Bootstrap Coefficients	
Model		Coefficient	SE	Lower 95% BCa	Upper 95% BCa
DV= MTS Efficiency					
104	Path A	.20†	.11		
	Path B	4.75	1.26		
	TOTAL EFFECT MTS TMS	2.45†	1.33		
	DIRECT EFFECT	1.87	1.24		
	INDIRECT EFFECT MTS IS Uniqueness Between Teams	.95	.50	-.04	2.03
	N = 82				
105	Path A	.10	.11		
	Path B	1.46	1.29		
	TOTAL EFFECT MTS TMS	2.45†	1.33		
	DIRECT EFFECT	2.33†	1.33		
	INDIRECT EFFECT MTS IS Uniqueness Within Team	.15	.26	-.19	1.11

N = 82

Note. † = *p*<.10, * = *p*<.05; ** = *p*<.01; Path A = IV→Mediator and Path B = Mediator →DV

				Bootstrap Coefficients	
Model		Coefficient	SE	Lower 95% BCa	Upper 95% BCa
DV= MTS Effectiveness					
106	Path A	.20†	.11		
	Path B	.92	.31		
	TOTAL EFFECT MTS TMS	.83**	.31		
	DIRECT EFFECT	.72*	.30		
	INDIRECT EFFECT MTS IS Uniqueness Between Teams	.18	.11	.03	.48
	N = 82				
107	Path A	.10	.11		
	Path B	.40	.30		
	TOTAL EFFECT MTS TMS	.83**	.31		
	DIRECT EFFECT	.80**	.32		
	INDIRECT EFFECT MTS IS Uniqueness Within	.04	.06	-.03	.27

Team

N = 82

Table 34: Analyses Regressing MTS SMM on MTS Trust

Step 1						Step 2					
Model	Variable	b	F	R^2	ΔR^2	Model	Variable	b	F	R^2	ΔR^2
DV = MTS Goal SMM											
108	AvgPC&VidPPlay	.18	2.68	.07†	-	108	AvgPC&VidPPlay	.16	2.43	.10	.03
	Iming	.18					Iming	.20†			
							MTS Trust TF	.16			
	N = 70										
DV = MTS Task SMM											
109	AvgPC&VidPPlay	.25*	2.26	.06	-	109	AvgPC&VidPPlay	.24†	1.73	.07	.01
	Iming	-.09					Iming	-.09			
							MTS Trust TF	.10			
	N = 68										

Step 1						Step 2					
Model	Variable	b	F	R^2	ΔR^2	Model	Variable	b	F	R^2	ΔR^2
DV = MTS Team SMM											
110	AvgPC&VidPPlay	.04	.35	.01	-	110	AvgPC&VidPPlay	.05	.43	.02	.01
	Iming	.10					Iming	.10			
							MTS Trust	-.10			
	N = 61										

Note. † = p<.10, * = p<.05; ** = p<.01

Table 35: Analyses Regressing MTS Performance on MTS SMM

Step 1						Step 2					
Model	Variable	b	F	R^2	ΔR^2	Model	Variable	b	F	R^2	ΔR^2
DV = MTS Efficiency											
111	AvgPC&VidPPlay	.26*	5.03	.13**	-	111	AvgPC&VidPPlay	.24*	3.64	.14	.01
	Iming	.22†					Iming	.20†			
							MTS GoalSMM	.11			
	N = 70										
112	AvgPC&VidPPlay	.27*	6.49	.16**	-	112	AvgPC&VidPPlay	.24*	4.75	.18	.02
	Iming	.26*					Iming	.27*			
							MTS Task SMM	.13			
	N = 68										
113	AvgPC&VidPPlay	.25*	5.71	.15**	-	113	AvgPC&VidPPlay	.28*	4.25	.18	.03
	Iming	.25*					Iming	.28*			
							MTS Team SMM	-.14			
	N = 61										

Step 1						Step 2					
Model	Variable	b	F	R^2	ΔR^2	Model	Variable	b	F	R^2	ΔR^2
DV = MTS Effectiveness											
114	AvgPC&VidPPlay	.24*	2.76	.08†	-	114	AvgPC&VidPPlay	.24†	1.83	.08	.0
	Iming	.10					Iming	.10			
							MTS GoalSMM	.03			
	N = 70										
115	AvgPC&VidPPlay	.19	3.11	.09*	-	115	AvgPC&VidPPlay	.13	3.69	.15*	.06*
	Iming	.19					Iming	.21†			
							MTS Task SMM	.25*			
	N = 68										
116	AvgPC&VidPPlay	.27*	3.66	.11*	-	116	AvgPC&VidPPlay	.28*	3.05	.14	.03
	Iming	.16					Iming	.18			
							MTS Team SMM	-.16			
	N = 61										

Note. † = p<.10, * = p<.05; ** = p<.01

Table 36: Mediator Analyses: The MTS SMM and MTS Performance Relationship Mediated by MTS IS Openness

				Bootstrap Coefficients	
Model		Coefficient	SE	Lower 95% BCa	Upper 95% BCa
DV= MTS Efficiency					
117	Path A	.27*	.11		
	Path B	3.57	1.54		
	TOTAL EFFECT MTS Goal SMM	1.39	1.50		
	DIRECT EFFECT	.57	1.49		
	INDIRECT EFFECT MTS IS Openness	.95	.56	.12	2.48
	N = 70				
118	Path A	.35	.12		
	Path B	3.80	1.51		
	TOTAL EFFECT MTS Task SMM	1.63	1.48		
	DIRECT EFFECT	.22	1.53		
	INDIRECT EFFECT MTS IS Openness	1.34†	.72	.23	3.15
	N = 68				

Model		Coefficient	SE	Bootstrap Coefficients	
				Lower 95% BCa	Upper 95% BCa
DV= MTS Efficiency					
119	Path A	-.07	.12		
	Path B	4.91	1.67		
	TOTAL EFFECT MTS Team SMM	-1.72	1.53		
	DIRECT EFFECT	-1.23	1.45		
	INDIRECT EFFECT MTS IS Openness	-.34	.67	-2.00	.81
	N = 61				
DV= MTS Effectiveness					
120	Path A	.27	.11		
	Path B	1.18	.35		
	TOTAL EFFECT MTS Goal SMM	.08	.36		
	DIRECT EFFECT	-.19	.34		
	INDIRECT EFFECT MTS IS Openness	.32†	.14	.10	.67
	N = 70				

				Bootstrap Coefficients	
Model		Coefficient	SE	Lower 95% BCa	Upper 95% BCa
DV= MTS Effectiveness					
121	Path A	.35**	.12		
	Path B	1.03**	.35		
	TOTAL EFFECT MTS Task SMM	.75*	.35		
	DIRECT EFFECT	.36	.36		
	INDIRECT EFFECT MTS IS Openness	.36*	.16	.13	.73
	N = 68				
122	Path A	-.07	.12		
	Path B	.92*	.40		
	TOTAL EFFECT MTS Team SMM	-.47	.35		
	DIRECT EFFECT	-.37	.34		
	INDIRECT EFFECT MTS IS Openness	-.06	.13	-.35	.16
	N = 61				

Note. † = $p<.10$, * = $p<.05$; ** = $p<.01$; Path A = IV→Mediator and Path B = Mediator →DV

Table 37: Moderator Analyses: The MTS TMS and MTS IS Uniqueness Relationship Moderated by Media Retrievability

Step 1						Step 2					
Model	Variable	b	F	R^2	ΔR^2	Model	Variable	b	F	R^2	ΔR^2
DV = MTS IS Uniqueness Between Teams											
123	AvgPC&VidPPlay	.16	2.99	.14*	-	123	AvgPC&VidPPlay	.13	3.41	.19*	.05*
	Iming	.21†					Iming	.26*			
	TMS	.14					TMS	.01			
	Media Retrievability Social	.14					Media Retrievability Social	.15			
							Interaction Term	-.26*			
	N = 78										
124	AvgPC&VidPPlay	.17	2.58	.12*	-	124	AvgPC&VidPPlay	.17	2.42	.14	.02
	Iming	.20†					Iming	.21†			
	TMS	.14					TMS	.13			
	Media Retrievability Task	-.05					Media Retrievability Task	-.07			
							Interaction Term	-.14			
	N = 78										

Step 1						Step 2					
Model	Variable	b	F	R^2	ΔR^2	Model	Variable	b	F	R^2	ΔR^2
DV = MTS IS Uniqueness Between Teams											
125	AvgPC&VidPPlay	.17	2.62	.12*	-	125	AvgPC&VidPPlay	.17	2.42	.14	.02
	Iming	.21†					Iming	.22*			
	MTS TMS	.12					MTS TMS	.19			
	Media Retrievability Aggregate	-.06					Media Retrievability Aggregate	-.08			
							Interaction Term	-.15			
	N = 82										
DV = MTS IS Uniqueness Within Team											
126	AvgPC&VidPPlay	.09	.69	.04	-	126	AvgPC&VidPPlay	.07	.92	.06	.02
	Iming	-.03					Iming	.00			
	MTS TMS	.12					MTS TMS	.03			
	Media Retrievability Social	.11					Media Retrievability Social	.11			
							Interaction Term	-.18			
	N = 78										

Step 1						Step 2					
Model	Variable	b	F	R^2	ΔR^2	Model	Variable	b	F	R^2	ΔR^2
DV = MTS IS Uniqueness Within Team											
127	AvgPC&VidPPlay	.10	.87	.05	-	127	AvgPC&VidPPlay	.10	1.11	.07	.02
	Iming	-.05					Iming	-.04			
	MTS TMS	.11					MTS TMS	.10			
	Media Retrievability Task	-.14					Media Retrievability Task	-.17			
							Interaction Term	-.17			
	N = 78										
128	AvgPC&VidPPlay	.10	.73	.04	-	128	AvgPC&VidPPlay	.10	.95	.06	.02
	Iming	.01					Iming	.02			
	MTS TMS	.07					MTS TMS	.15			
	Media Retrievability Aggregate	-.14					Media Retrievability Aggregate	-.16			
							Interaction Term	-.17			
	N = 82										

Table 38: Moderator Analyses: The MTS SMM and MTS IS Openness Relationship Moderated by Media Richness

Step 1						Step 2					
Model	Variable	b	F	R^2	ΔR^2	Model	Variable	b	F	R^2	ΔR^2
DV = MTS ISOpenness											
129	AvgPC&VidPPlay	.08	1.21	.09	-	129	AvgPC&VidPPlay	.07	1.71	.15†	.06†
	Iming	.25					Iming	.20			
	MTS Goal MM	.06					MTS Goal MM	.13			
	Media Richness	-.01					Media Richness	.04			
							Interaction Term	-.26†			
	N = 55										
130	AvgPC&VidPPlay	.00	3.89	.24**	-	130	AvgPC&VidPPlay	.01	3.19	.25	.01
	Iming	.28*					Iming	.25†			
	MTS Task MM	.38**					MTS Task MM	.38**			
	Media Richness	.09					Media Richness	.09			
							Interaction Term	-.10			
	N = 54										

Step 1						Step 2					
Model	Variable	b	F	R^2	ΔR^2	Model	Variable	b	F	R^2	ΔR^2
DV = MTS ISOpenness											
131	AvgPC&VidPPlay	.04	2.81	.20*	-	131	AvgPC&VidPPlay	.04	2.25	.20	.0
	Iming	.28*					Iming	.29*			
	MTS Team MM	-.25†					MTS Team MM	-.24†			
	Media Richness	.18					Media Richness	.17			
							Interaction Term	.06			
	N = 49										

Note. † = *p*<.10, * = *p*<.05; ** = *p*<.01

Table 39: Analyses Regressing MTS SMM on MTS Efficacy

Step 1						Step 2					
Model	Variable	b	F	R^2	ΔR^2	Model	Variable	b	F	R^2	ΔR^2
DV = MTS Goal SMM											
132	AvgPC&VidPPlay	.18	2.68	.07†	-	132	AvgPC&VidPPlay	.14	2.80	.11†	.04†
	Iming	.18					Iming	.15			
							MTS TaskEfficacy	.20†			
	N = 70										
133	AvgPC&VidPPlay	.18	2.68	.07†	-	133	AvgPC&VidPPlay	.17	4.69	.17**	.10**
	Iming	.18					Iming	.21†			
							MTS Taskforce Efficacy-tm	.32**			
	N = 70										
134	AvgPC&VidPPlay	.18	2.68	.07†	-	134	AvgPC&VidPPlay	.16	3.29	.13*	.06*
	Iming	.18					Iming	.19†			
	N = 70						MTS Taskforce Efficacy	.24*			

Step 1						Step 2					
Model	Variable	b	F	R^2	ΔR^2	Model	Variable	b	F	R^2	ΔR^2
DV = MTS Goal SMM											
135	AvgPC&VidPPlay	.18	2.68	.07†	-	135	AvgPC&VidPPlay	.17	2.41	.10	.03
	Iming	.18					Iming	.16			
							MTS Bandura Percent	.16			
	N = 70										
136	AvgPC&VidPPlay	.18	2.68	.07†	-	136	AvgPC&VidPPlay	.20†	2.50	.10	.03
	Iming	.18					Iming	.14			
							MTS Bandura Yes/No	.17			
	N = 70										
DV = MTS Task SMM											
137	AvgPC&VidPPlay	.25*	2.26	.06	-	137	AvgPC&VidPPlay	.23†	1.78	.08	.02
	Iming	-.09					Iming	-.11			
							MTS TaskEfficacy	.11			
	N = 68										

Step 1						Step 2					
Model	Variable	b	F	R^2	ΔR^2	Model	Variable	b	F	R^2	ΔR^2
DV = MTS Task SMM											
138	AvgPC&VidPPlay	.25*	2.26	.06	-	138	AvgPC&VidPPlay	.25*	1.55	.07	.01
	Iming	-.09					Iming	-.09			
							MTS Taskforce Efficacy-tm	-.05			
	N = 68										
139	AvgPC&VidPPlay	.25*	2.26	.06	-	139	AvgPC&VidPPlay	.26*	1.57	.07	.01
	Iming	-.09					Iming	-.08			
							MTS Taskforce Efficacy	-.06			
	N = 68										
140	AvgPC&VidPPlay	.25*	2.26	.06	-	140	AvgPC&VidPPlay	.26*	1.49	.06	.0
	Iming	-.09					Iming	-.09			
							MTS Bandura Percent	-.02			
	N = 68										

Step 1						Step 2					
Model	Variable	b	F	R^2	ΔR^2	Model	Variable	b	F	R^2	ΔR^2
DV = MTS Task SMM											
141	AvgPC&VidPPlay	.25*	2.26	.06	-	141	AvgPC&VidPPlay	.26*	1.50	.07	.01
	Iming	-.09					Iming	-.09			
							MTS Bandura Yes/No	.03			
	N = 68										
DV = MTS Team SMM											
142	AvgPC&VidPPlay	.04	.35	.01	-	142	AvgPC&VidPPlay	.06	.37	.02	.01
	Iming	.10					Iming	.11			
							MTS TaskEfficacy	-.09			
	N = 61										
143	AvgPC&VidPPlay	.04	.35	.01	-	143	AvgPC&VidPPlay	.05	.32	.02	.01
	Iming	.10					Iming	.10			
							MTS Taskforce Efficacy-tm	-.07			
	N = 61										

Step 1						Step 2					
Model	Variable	b	F	R^2	ΔR^2	Model	Variable	b	F	R^2	ΔR^2
DV = MTS Team SMM											
144	AvgPC&VidPPlay	.04	.35	.01	-	144	AvgPC&VidPPlay	.05	.30	.02	.01
	Iming	.10					Iming	.10			
							MTS Taskforce Efficacy	-.06			
	N = 61										
145	AvgPC&VidPPlay	.04	.35	.01	-	145	AvgPC&VidPPlay	.03	.26	.01	.0
	Iming	.10					Iming	.09			
							MTS Bandura Percent	.04			
	N = 61										
146	AvgPC&VidPPlay	.04	.35	.01	-	146	AvgPC&VidPPlay	.02	1.05	.05	.04
	Iming	.10					Iming	.05			
							MTS Bandura Yes/No	.21			
	N = 61										

Table 40: Analyses Regressing MTS TMS on MTS Trust

Step 1						Step 2					
Model	Variable	b	F	R^2	ΔR^2	Model	Variable	b	F	R^2	ΔR^2
DV = MTS TMS											
147	AvgPC&VidPPlay	.11	3.14	.07*	-	147	AvgPC&VidPPlay	.05	6.86	.21**	.14**
	Iming	.23*					Iming	.25*			
							MTS Trust	.37**			
	N = 82										

Note. † = p<.10, * = p<.05; ** = p<.01

Table 41: Mediator Analyses: The MTS TMS and MTS Performance Relationship Mediated by MTS IS Openness

				Bootstrap Coefficients	
Model		Coefficient	SE	Lower 95% BCa	Upper 95% BCa
DV= MTS Efficiency					
148	Path A	.58**	.09		
	Path B	3.56*	1.54		
	TOTAL EFFECT MTS TMS	2.45	1.33		
	DIRECT EFFECT	.45	1.54		
	INDIRECT EFFECT MTS IS Openness	2.11*	.90	.36	3.87
	N = 82				
DV= MTS Effectiveness					
149	Path A	.58**	.09		
	Path B	.79*	.37		
	TOTAL EFFECT MTS TMS	.83**	.31		
	DIRECT EFFECT	.40	.37		
	INDIRECT EFFECT MTS IS Openness	.46*	.18	.12	.85

N = 82

Note. † = p<.10, * = p<.05; ** = p<.01; Path A = IV→Mediator and Path B = Mediator →DV

Table 42: Mediator Analyses: The MTS SMM and MTS Performance Relationship Mediated by MTS IS Uniqueness

				Bootstrap Coefficients	
Model		Coefficient	SE	Lower 95% BCa	Upper 95% BCa
DV= MTS Efficiency					
150	Path A	.16	.12		
	Path B	5.21**	1.44		
	TOTAL EFFECT MTS Goal SMM	1.39	1.50		
	DIRECT EFFECT	.92	1.38		
	INDIRECT EFFECT MTS IS Uniqueness Between Teams	.81	.64	-.20	2.43
	N = 70				
151	Path A	.33	.11		
	Path B	4.99	1.52		
	TOTAL EFFECT MTS Task SMM	1.63	1.48		
	DIRECT EFFECT	-.01	1.47		
	INDIRECT EFFECT MTS IS Uniqueness Between Teams	1.65*	.71	.48	3.29
	N = 68				

				Bootstrap Coefficients	
Model		Coefficient	SE	Lower 95% BCa	Upper 95% BCa
DV= MTS Efficiency					
152	Path A	.06	.13		
	Path B	5.61**	1.44		
	TOTAL EFFECT MTS Team SMM	-1.72	1.53		
	DIRECT EFFECT	-1.87	1.37		
	INDIRECT EFFECT MTS IS Uniqueness Between Teams	.33	.84	-1.20	2.16
	N = 61				
153	Path A	.09	.12		
	Path B	1.25	1.48		
	TOTAL EFFECT MTS Goal SMM	1.39	1.50		
	DIRECT EFFECT	1.31	1.50		
	INDIRECT EFFECT MTS IS Uniqueness Within Team	.11	.30	-.18	1.16
	N = 70				

				Bootstrap Coefficients	
Model		Coefficient	SE	Lower 95% BCa	Upper 95% BCa
DV= MTS Efficiency					
154	Path A	.31**	.11		
	Path B	1.68	1.52		
	TOTAL EFFECT MTS Task SMM	1.63	1.48		
	DIRECT EFFECT	1.10	1.55		
	INDIRECT EFFECT MTS IS Uniqueness Within Team	.52	.55	-.40	1.72
	N = 68				
155	Path A	.05	.13		
	Path B	3.09*	1.54		
	TOTAL EFFECT MTS Team SMM	-1.72	1.53		
	DIRECT EFFECT	-1.89	1.49		
	INDIRECT EFFECT MTS IS Uniqueness Within Team	.16	.44	-.57	1.26
	N = 61				

				Bootstrap Coefficients	
Model		Coefficient	SE	Lower 95% BCa	Upper 95% BCa
DV= MTS Effectiveness					
156	Path A	.16	.11		
	Path B	1.17**	.35		
	TOTAL EFFECT MTS Goal SMM	.08	.36		
	DIRECT EFFECT	-.03	.34		
	INDIRECT EFFECT MTS IS Uniqueness Between Teams	.18	.16	-.06	.58
	N = 70				
157	Path A	.33**	.11		
	Path B	1.09**	.36		
	TOTAL EFFECT MTS Task SMM	.75*	.35		
	DIRECT EFFECT	.39	.35		
	INDIRECT EFFECT MTS IS Uniqueness Between Teams	.36	.18	.10	.84
	N = 68				

				Bootstrap Coefficients	
Model		Coefficient	SE	Lower 95% BCa	Upper 95% BCa
DV= MTS Effectiveness					
158	Path A	.06	.13		
	Path B	1.05	.35		
	TOTAL EFFECT MTS Team SMM	-.47	.35		
	DIRECT EFFECT	-.49	.33		
	INDIRECT EFFECT MTS IS Uniqueness Between Teams	.06	.16	-.24	.42
	N = 61				
159	Path A	.09	.12		
	Path B	.50	.35		
	TOTAL EFFECT MTS Goal SMM	.08	.36		
	DIRECT EFFECT	.04	.36		
	INDIRECT EFFECT MTS IS Uniqueness Within Team	.05	.07	-.05	.25
	N = 70				

				Bootstrap Coefficients	
Model		Coefficient	SE	Lower 95% BCa	Upper 95% BCa
DV= MTS Effectiveness					
160	Path A	.31**	.11		
	Path B	.48	.36		
	TOTAL EFFECT MTS Task SMM	.75*	.35		
	DIRECT EFFECT	.60	.37		
	INDIRECT EFFECT MTS IS Uniqueness Within Team	.15	.14	-.03	.55
	N = 68				
161	Path A	.05	.13		
	Path B	.70*	.36		
	TOTAL EFFECT MTS Team SMM	-.47	.35		
	DIRECT EFFECT	-.51	.15		
	INDIRECT EFFECT MTS IS Uniqueness Within Team	.04	.11	-.13	.34
	N = 61				

Note. † = p<.10, * = p<.05; ** = p<.01; Path A = IV→Mediator and Path B = Mediator →DV

Table 43: Moderator Analyses: The MTS TMS and MTS IS Openness Relationship Moderated by Media Retrievability

Step 1						Step 2					
Model	Variable	b	F	R^2	ΔR^2	Model	Variable	b	F	R^2	ΔR^2
DV = MTS IS Openness											
162	AvgPC&VidPPlay	-.00	11.50	.38**	-	162	AvgPC&VidPPlay	.00	9.16	.39	.01
	Iming	.16†					Iming	.09			
	MTS TMS	.57**					MTS TMS	.59**			
	Media Retrievability Social	.16†					Media Retrievability Social	.15†			
							Interaction Term	.06			
	N = 78										
163	AvgPC&VidPPlay	.00	10.39	.36**	-	163	AvgPC&VidPPlay	.00	8.21	.36	.0
	Iming	.08					Iming	.08			
	MTS TMS	.57					MTS TMS	.57			
	Media Retrievability Task	.02					Media Retrievability Task	.02			
							Interaction Term	.01			
	N = 78										

Step 1						Step 2					
Model	Variable	b	F	R^2	ΔR^2	Model	Variable	b	F	R^2	ΔR^2
DV = MTS IS Openness											
164	AvgPC&VidPPlay	.00	10.35	.35**	-	164	AvgPC&VidPPlay	.00	8.19	.35	.0
	Iming	.12					Iming	.11			
	MTS TMS	.55**					MTS TMS	.54**			
	Media Retrievability Aggregate	.02					Media Retrievability Aggregate	.03			
							Interaction Term	.02			
	N = 82										

Note. † = *p*<.10, * = *p*<.05; ** = *p*<.01

Table 44: Moderator Analyses: The MTS SMM and MTS IS Uniqueness Relationship Moderated by Media Retrievability

Step 1						Step 2					
Model	Variable	b	F	R^2	ΔR^2	Model	Variable	b	F	R^2	ΔR^2
DV = MTS IS Uniqueness Between Teams											
165	AvgPC&VidPPlay	.17	1.89	.11	-	165	AvgPC&VidPPlay	.17	1.56	.11	.00
	Iming	.22†					Iming	.22†			
	MTS Goal MM	-.01					MTS Goal MM	-.01			
	Media Retrievability Social	.17					Media Retrievability Social	.26			
							Interaction Term	-.11			
	N = 66										
166	AvgPC&VidPPlay	.07	5.03	.25**	-	166	AvgPC&VidPPlay	.10	4.42	.27	.02
	Iming	.28*					Iming	.26*			
	MTS Task SMM	.36**					MTS Task SMM	.36**			
	Media Retrievability Social	.16					Media Retrievability Social	.29*			
							Interaction Term	-.20			
	N = 65										

Step 1						Step 2					
Model	Variable	b	F	R^2	ΔR^2	Model	Variable	b	F	R^2	ΔR^2
DV = MTS IS Uniqueness Between Teams											
167	AvgPC&VidPPlay	.25†	2.11	.13†	-	167	AvgPC&VidPPlay	.25†	1.66	.13	.00
	Iming	.20					Iming	.20			
	MTS Team SMM	-.02					MTS Team SMM	-.03			
	Media Retrievability Social	.13					Media Retrievability Social	.13			
							Interaction Term	-.01			
	N = 59										
168	AvgPC&VidPPlay	.17	1.37	.08	-	168	AvgPC&VidPPlay	.16	1.09	.08	.00
	Iming	.20					Iming	.20			
	MTS Goal SMM	.02					MTS Goal SMM	.02			
	Media Retrievability Task	-.03					Media Retrievability Task	-.03			
							Interaction Term	-.03			
	N = 66										

Step 1						Step 2					
Model	Variable	b	F	R^2	ΔR^2	Model	Variable	b	F	R^2	ΔR^2
DV = MTS IS Uniqueness Between Teams											
169	AvgPC&VidPPlay	.07	4.36	.22**	-	169	AvgPC&VidPPlay	.05	4.41	.27†	.05
	Iming	.26*					Iming	.25*			
	MTS Task SMM	.37**					MTS Task SMM	.35**			
	Media Retrievability Task	.03					Media Retrievability Task	-.04			
							Interaction Term	-.23*			
	N = 65										
170	AvgPC&VidPPlay	.26*	1.82	.12	-	170	AvgPC&VidPPlay	.27*	1.43	.12	.00
	Iming	.19					Iming	.19			
	MTS Team SMM	-.02					MTS Team SMM	-.01			
	Media Retrievability Task	.00					Media Retrievability Task	-.00			
							Interaction Term	.02			
	N = 59										

Step 1						Step 2					
Model	Variable	b	F	R^2	ΔR^2	Model	Variable	b	F	R^2	ΔR^2
DV = MTS IS Uniqueness Between Teams											
171	AvgPC&VidPPlay	.15	1.62	.09	-	171	AvgPC&VidPPlay	.14	1.36	.10	.01
	Iming	.19					Iming	.20			
	MTS Goal SMM	.09					MTS Goal SMM	.15			
	Media Retrievability Aggregate	-.05					Media Retrievability Aggregate	-.06			
							Interaction Term	-.09			
	N = 70										
172	AvgPC&VidPPlay	.06	3.86	.19**	-	172	AvgPC&VidPPlay	.04	3.77	.23†	.04†
	Iming	.27*					Iming	.25*			
	MTS Task SMM	.33**					MTS Task SMM	.44**			
	Media Retrievability Aggregate	-.01					Media Retrievability Aggregate	-.07			
							Interaction Term	-.23†			
	N = 68										

Step 1						Step 2					
Model	Variable	b	F	R^2	ΔR^2	Model	Variable	b	F	R^2	ΔR^2
DV = MTS IS Uniqueness Between Teams											
173	AvgPC&VidPPlay	.22†	1.78	.11	-	173	AvgPC&VidPPlay	.22†	1.40	.11	.00
	Iming	.22†					Iming	.22†			
	MTS Team SMM	.03					MTS Team SMM	.03			
	Media Retrievability Aggregate	-.03					Media Retrievability Aggregate	-.03			
							Interaction Term	-.01			
	N = 61										
DV = MTS IS Uniqueness Within Team											
174	AvgPC&VidPPlay	.10	.47	.03	-	174	AvgPC&VidPPlay	.10	.37	.03	.00
	Iming	.03					Iming	.03			
	MTS Goal SMM	-.02					MTS Goal SMM	-.02			
	Media Retrievability Social	.14					Media Retrievability Social	.14			
							Interaction Term	-.01			
	N = 66										

Step 1						Step 2					
Model	Variable	b	F	R^2	ΔR^2	Model	Variable	b	F	R^2	ΔR^2
DV = MTS IS Uniqueness Within Team											
175	AvgPC&VidPPlay	.00	2.52	.14*	-	175	AvgPC&VidPPlay	.04	2.35	.16	.02
	Iming	-.05					Iming	-.07			
	MTS Task SMM	.34**					MTS Task SMM	.34**			
	Media Retrievability Social	.14					Media Retrievability Social	.27†			
							Interaction Term	-.20			
	N = 65										
176	AvgPC&VidPPlay	.12	.54	.04	-	176	AvgPC&VidPPlay	.16	1.18	.10†	.06†
	Iming	-.10					Iming	-.04			
	MTS Team SMM	.01					MTS Team SMM	.09			
	Media Retrievability Social	.12					Media Retrievability Social	-.06			
							Interaction Term	.32†			
	N = 59										

Step 1						Step 2					
Model	Variable	b	F	R^2	ΔR^2	Model	Variable	b	F	R^2	ΔR^2
DV = MTS IS Uniqueness Within Team											
177	AvgPC&VidPPlay	.11	.77	.05	-	177	AvgPC&VidPPlay	.09	.84	.07	.02
	Iming	-.00					Iming	.01			
	MTS Goal SMM	.01					MTS Goal SMM	.02			
	Media Retrievability Task	-.19					Media Retrievability Task	-.21†			
							Interaction Term	-.14			
	N = 66										
178	AvgPC&VidPPlay	.02	2.39	.14†	-	178	AvgPC&VidPPlay	-.02	3.30	.22*	.08**
	Iming	-.07					Iming	-.10			
	MTS Task SMM	.32**					MTS Task SMM	.30*			
	Media Retrievability Task	-.11					Media Retrievability Task	-.20			
							Interaction Term	-.30*			
	N = 65										

Step 1						Step 2					
Model	Variable	b	F	R^2	ΔR^2	Model	Variable	b	F	R^2	ΔR^2
DV = MTS IS Uniqueness Within Team											
179	AvgPC&VidPPlay	.14	.65	.05	-	179	AvgPC&VidPPlay	.15	.56	.05	.00
	Iming	-.10					Iming	-.09			
	MTS Team SMM	.02					MTS Team SMM	.05			
	Media Retrievability Task	-.14					Media Retrievability Task	-.15			
							Interaction Term	.07			
	N = 59										
180	AvgPC&VidPPlay	.09	.88	.05	-	180	AvgPC&VidPPlay	.06	1.09	.08	.03
	Iming	.04					Iming	.05			
	MTS Goal SMM	.07					MTS Goal SMM	.19			
	Media Retrievability Aggregate	-.18					Media Retrievability Aggregate	-.20†			
							Interaction Term	-.21			
	N = 70										

Step 1						Step 2					
Model	Variable	b	F	R^2	ΔR^2	Model	Variable	b	F	R^2	ΔR^2
DV = MTS IS Uniqueness Within Team											
181	AvgPC&VidPPlay	-.02	2.03	.11	-	181	AvgPC&VidPPlay	-.04	2.65	.17*	.06*
	Iming	-.02					Iming	-.04			
	MTS Task SMM	.29*					MTS Task SMM	.44**			
	Media Retrievability Aggregate	-.12					Media Retrievability Aggregate	-.20			
							Interaction Term	-.30*			
	N = 68										
182	AvgPC&VidPPlay	.11	.60	.04	-	182	AvgPC&VidPPlay	.12	.50	.04	.00
	Iming	-.07					Iming	-.06			
	MTS Team SMM	.06					MTS Team SMM	.03			
	Media Retrievability Aggregate	-.16					Media Retrievability Aggregate	-.16			
							Interaction Term	.06			
	N = 61										

Note. † = $p<.10$, * = $p<.05$; ** = $p<.01$

Table 45: Moderator Analyses: The MTS SMM and MTS IS Openness Relationship Moderated by Media Retrievability

Step 1						Step 2					
Model	Variable	b	F	R^2	ΔR^2	Model	Variable	b	F	R^2	ΔR^2
DV = MTS IS Openness											
183	AvgPC&VidPPlay	.05	2.26	.13†	-	183	AvgPC&VidPPlay	.05	1.80	.13	.0
	Iming	.20					Iming	.20			
	MTS Goal SMM	.17					MTS Goal SMM	.16			
	Media Retrievability Social	.19					Media Retrievability Social	.13			
							Interaction Term	.07			
	N = 66										
184	AvgPC&VidPPlay	-.02	5.47	.26**	-	184	AvgPC&VidPPlay	.00	4.49	.27	.01
	Iming	.29**					Iming	.28*			
	MTS Task SMM	.39**					MTS Task SMM	.39**			
	Media Retrievability Social	.21†					Media Retrievability Social	.29*			
							Interaction Term	-.12			
	N = 65										

Step 1						Step 2					
Model	Variable	b	F	R^2	ΔR^2	Model	Variable	b	F	R^2	ΔR^2
DV = MTS IS Openness											
185	AvgPC&VidPPlay	.10	2.55	.16*	-	185	AvgPC&VidPPlay	.09	2.07	.16	.0
	Iming	.29*					Iming	.28*			
	MTS Team SMM	-.16					MTS Team SMM	-.18			
	Media Retrievability Social	.21†					Media Retrievability Social	.26†			
							Interaction Term	-.08			
	N = 59										
186	AvgPC&VidPPlay	.05	1.59	.09	-	186	AvgPC&VidPPlay	.09	1.94	.14	.05
	Iming	.17					Iming	.15			
	MTS Goal SMM	.20					MTS Goal SMM	.19			
	Media Retrievability Task	-.02					Media Retrievability Task	.01			
							Interaction Term	.22†			
	N = 66										

Step 1						Step 2					
Model	Variable	b	F	R^2	ΔR^2	Model	Variable	b	F	R^2	ΔR^2
DV = MTS IS Openness											
187	AvgPC&VidPPlay	-.02	4.34	.22**	-	187	AvgPC&VidPPlay	-.02	3.48	.23	.01
	Iming	.27*					Iming	.27*			
	MTS Task SMM	.40**					MTS Task SMM	.40**			
	Media Retrievability Task	.05					Media Retrievability Task	.04			
							Interaction Term	-.06			
	N = 65										
188	AvgPC&VidPPlay	.13	1.83	.12	-	188	AvgPC&VidPPlay	.12	1.48	.12	.0
	Iming	.27*					Iming	.26*			
	MTS Team SMM	-.15					MTS Team SMM	-.17			
	Media Retrievability Task	-.06					Media Retrievability Task	-.06			
							Interaction Term	-.07			
	N = 59										

Step 1						Step 2					
Model	Variable	b	F	R^2	ΔR^2	Model	Variable	b	F	R^2	ΔR^2
DV = MTS IS Openness											
189	AvgPC&VidPPlay	.03	2.04	.11†	-	189	AvgPC&VidPPlay	.05	2.16	.14	.03
	Iming	.17					Iming	.16			
	MTS Goal SMM	.24*					MTS Goal SMM	.10			
	Media Retrievability Aggregate	-.04					Media Retrievability Aggregate	-.02			
							Interaction Term	.23			
	N = 70										
190	AvgPC&VidPPlay	-.03	4.09	.20**	-	190	AvgPC&VidPPlay	-.03	3.24	.20	.0
	Iming	.29**					Iming	.29**			
	MTS Task SMM	.37**					MTS Task SMM	.39**			
	Media Retrievability Aggregate	.03					Media Retrievability Aggregate	.02			
							Interaction Term	-.04			
	N = 68										

Step 1						Step 2					
Model	Variable	b	F	R^2	ΔR^2	Model	Variable	b	F	R^2	ΔR^2
DV = MTS IS Openness											
191	AvgPC&VidPPlay	.10	1.87	.12	-	191	AvgPC&VidPPlay	.09	1.54	.12	.0
	Iming	.20*					Iming	.29			
	MTS Team SMM	-.11					MTS Team SMM	-.07			
	Media Retrievability Aggregate	-.08					Media Retrievability Aggregate	-.07			
							Interaction Term	-.08			
	N = 61										

Note. † = *p*<.10, * = *p*<.05; ** = *p*<.01

Table 46: Moderator Analyses: The MTS SMM and MTS IS Uniqueness Relationship Moderated by Media Richness

Step 1						Step 2					
Model	Variable	b	F	R^2	ΔR^2	Model	Variable	b	F	R^2	ΔR^2
DV = MTS IS Uniqueness Between Teams											
192	AvgPC&VidPPlay	.27*	1.77	.12	-	192	AvgPC&VidPPlay	.27*	1.51	.13	.01
	Iming	.19					Iming	.18			
	MTS Goal SMM	.02					MTS Goal SMM	.04			
	Media Richness	-.08					Media Richness	-.06			
							Interaction Term	-.10			
	N = 55										
193	AvgPC&VidPPlay	.12	3.19	.20*	-	193	AvgPC&VidPPlay	.12	2.61	.21	.01
	Iming	.29*					Iming	.26†			
	MTS Task SMM	.32*					MTS Task SMM	.32*			
	Media Richness	-.09					Media Richness	-.08			
							Interaction Term	-.09			
	N = 54										

Step 1						Step 2					
Model	Variable	b	F	R^2	ΔR^2	Model	Variable	b	F	R^2	ΔR^2
DV = MTS IS Uniqueness Between Teams											
194	AvgPC&VidPPlay	.30*	1.59	.12	-	194	AvgPC&VidPPlay	.29*	1.40	.14	.02
	Iming	.15					Iming	.16			
	MTS Team SMM	-.03					MTS Team SMM	-.02			
	Media Richness	-.03					Media Richness	-.05			
							Interaction Term	.12			
	N = 49										
DV = MTS IS Uniqueness Within Team											
195	AvgPC&VidPPlay	.03	.21	.02	-	195	AvgPC&VidPPlay	.04	.33	.03	.01
	Iming	-.02					Iming	.01			
	MTS Goal SMM	.08					MTS Goal SMM	.05			
	Media Richness	-.11					Media Richness	-.14			
							Interaction Term	.13			
	N = 55										

Step 1						Step 2					
Model	Variable	b	F	R^2	ΔR^2	Model	Variable	b	F	R^2	ΔR^2
DV = MTS IS Uniqueness Within Team											
196	AvgPC&VidPPlay	-.10	5.30	.30**	-	196	AvgPC&VidPPlay	-.10	4.17	.30	.00
	Iming	-.06					Iming	-.05			
	MTS Task SMM	.54**					MTS Task SMM	.54**			
	Media Richness	-.07					Media Richness	-.07			
							Interaction Term	.03			
	N = 54										
197	AvgPC&VidPPlay	.09	.39	.03	-	197	AvgPC&VidPPlay	.10	.35	.04	.01
	Iming	-.18					Iming	-.19			
	MTS Team SMM	.00					MTS Team SMM	-.01			
	Media Richness	.00					Media Richness	.02			
							Interaction Term	-.07			
	N = 49										

Table 47: Moderator Analyses: The MTS TMS and MTS IS Openness Relationship Moderated by Media Richness

Step 1						Step 2					
Model	Variable	b	F	R^2	ΔR^2	Model	Variable	b	F	R^2	ΔR^2
DV = MTS ISOpenness											
198	AvgPC&VidPPlay	.00	7.59	.34**	-	198	AvgPC&VidPPlay	.00	6.09	.34	.0
	Iming	.05					Iming	.04			
	MTS TMS	.54**					MTS TMS	.54**			
	Media Richness	.10					Media Richness	.10			
							Interaction Term	-.07			
	N = 64										

Note. † = *p*<.10, * = *p*<.05; ** = *p*<.01

Table 48: Moderator Analyses: The MTS TMS and MTS IS Uniqueness Relationship Moderated by Media Richness

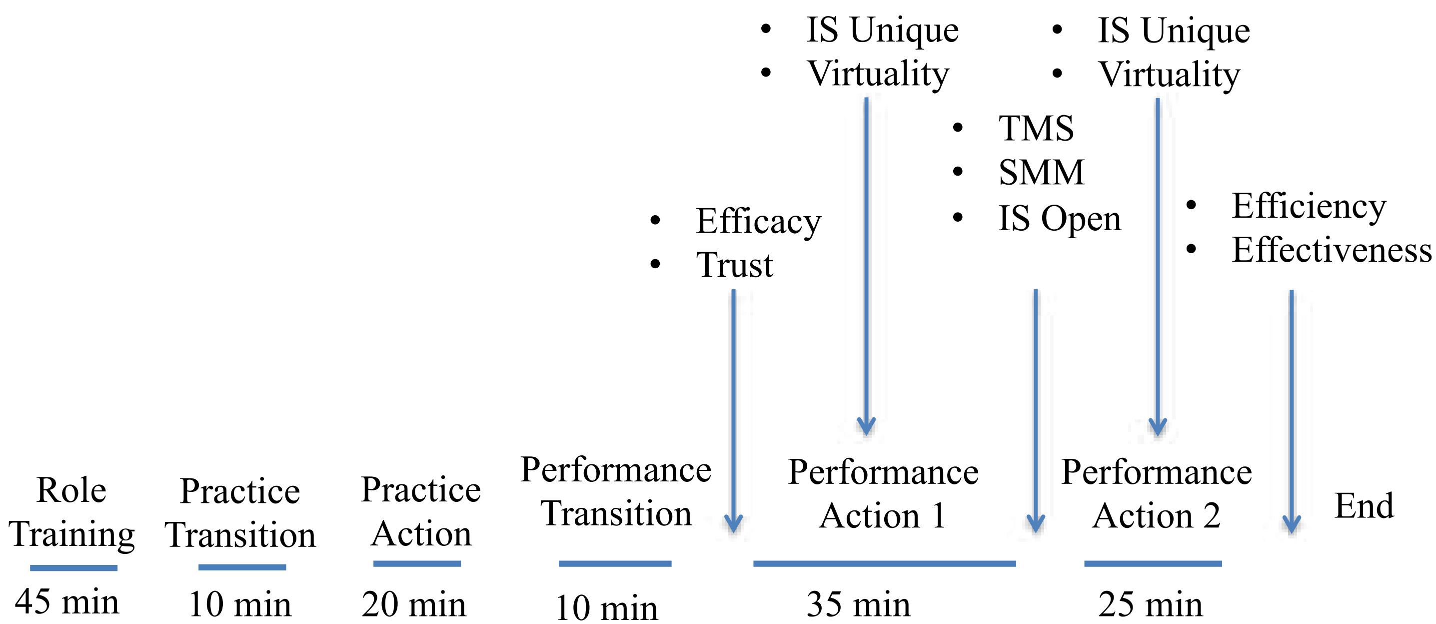
Step 1						Step 2					
Model	Variable	b	F	R^2	ΔR^2	Model	Variable	b	F	R^2	ΔR^2
DV = MTS IS Uniqueness Between Teams											
199	AvgPC&VidPPlay	.26*	2.61	.15*	-	199	AvgPC&VidPPlay	.26*	2.23	.16	.01
	Iming	.16					Iming	.15			
	MTS TMS	.13					MTS TMS	.13			
	Media Richness	-.02					Media Richness	-.01			
							Interaction Term	-.11			
	N = 64										
DV = MTS IS Uniqueness Within Team											
200	AvgPC&VidPPlay	.05	.77	.05	-	200	AvgPC&VidPPlay	.05	.70	.06	.01
	Iming	-.15					Iming	-.16			
	MTS TMS	.22					MTS TMS	.21			
	Media Richness	.04					Media Richness	.04			
							Interaction Term	-.09			
	N = 64										

Note. † = p<.10, * = p<.05; ** = p<.01

APPENDIX C

SESSION TIMELINE

Session Timeline



APPENDIX D

PERFORMANCE MISSION INTELLIGENCE DISTRIBUTION

Performance Mission Intelligence

Intelligence		PR	PS	SR	SS
A4 – Tire Fire (238, 305)	Non-Hotspot Intel	X	X	X	X
A4 – Van (232, 207)	Non-Hotspot Intel	O	O	X	X
A9 – AFV (244, 432)	Hotspot Intel	X	X	O	O
A9 – AFV (321, 149)	Hotspot Intel	X	O	X	O
A9 – Tent (178, 432)	Hotspot Intel	O	X	X	X
C3 – Barrel (247, 229)	Hotspot Intel	X	O	X	O
C3 – Tire Fire (110, 233)	Hotspot Intel	X	X	O	X
C3 – Tire Fire (397, 234)	Hotspot Intel	O	O	X	X
C7 – Checkpoint (102, 446)	Non-Hotspot Intel	X	X	O	O
C7 – RPG (106, 334)	Non-Hotspot Intel	X	X	X	X
E1 – Radio Tower (304, 436)	Hotspot Intel	X	O	O	X
E1 – Tire Fire (235, 82)	Hotspot Intel	O	O	X	O
E1 – Tire Fire (442, 203)	Hotspot Intel	O	X	O	X
E1 – Van (314, 180)	Hotspot Intel	O	X	X	O
E2 – AFV (394, 241)	Non-Hotspot Intel	X	O	X	O
E2 – Civilian (420, 150)	Non-Hotspot Intel	X	O	O	X
E4 – Radio Tower (406, 129)	Non-Hotspot Intel	X	O	X	O
E4 – Sedan (225, 267)	Non-Hotspot Intel	X	O	O	X
E8 – Civilian (117, 445)	Hotspot Intel	O	X	X	O
E8 – Humanitarian Tent (100, 156)	Hotspot Intel	X	O	O	X
E8 – RPG (74, 86)	Hotspot Intel	O	X	O	X
E8 – RPG (89, 379)	Hotspot Intel	X	O	O	O
F10 – Radio Tower (113, 436)	Hotspot Intel	X	X	O	O

F10 – Sedan (223, 265)	Hotspot Intel	O	X	O	X
F10 – Tire Fire (276, 97)	Hotspot Intel	X	X	X	X
F10 – Tire Fire (91, 324)	Hotspot Intel	O	O	O	X
F3 – AFV (119, 412)	Hotspot Intel	O	X	O	O
F3 – AFV (356, 178)	Hotspot Intel	X	X	X	X
F3 – Checkpoint (135, 349)	Hotspot Intel	O	O	X	X
F3 – Civilian (415, 178)	Hotspot Intel	O	X	O	X
F4 – RPG (127, 411)	Non-Hotspot Intel	O	O	X	O
F4 – AFV (366, 186)	Non-Hotspot Intel	O	X	O	X
F4 – Civilian (367, 82)	Non-Hotspot Intel	X	O	O	O
G4 – Radio Tower (88, 152)	Hotspot Intel	O	X	O	O
G4 – Tire Fire (438, 326)	Hotspot Intel	X	O	O	X
G4 – Tire Fire (62, 325)	Hotspot Intel	O	X	X	O
G4 – Van (245, 332)	Hotspot Intel	X	O	X	O
G8 – AFV (52, 304)	Hotspot Intel	O	X	X	O

Intelligence		PR	PS	SR	SS
G8 – Civilian (115, 291)	Hotspot Intel	X	O	O	X
G8 – Civilian (345, 285)	Hotspot Intel	X	O	X	O
G8 – RPG (432, 304)	Hotspot Intel	O	O	O	X
G9 – Sedan (125, 414)	Non-Hotspot Intel	O	O	O	X
G9 – Tire Fire (221, 295)	Non-Hotspot Intel	O	X	O	X
G9 – Tire Fire (296, 429)	Non-Hotspot Intel	O	X	X	O
G9 – Tire Fire (71, 300)	Non-Hotspot Intel	O	O	X	O
H3 – Checkpoint (431, 107)	Hotspot Intel	X	X	X	X
H3 – Humanitarian Tent (98, 411)	Hotspot Intel	O	O	X	O
H3 – RPG (100, 357)	Hotspot Intel	X	X	O	O

H3 – RPG (428, 279)	Hotspot Intel	X	O	X	O
H4 – Fire (121, 284)	Non-Hotspot Intel	O	X	O	X
H4 – Radio Tower (420, 106)	Non-Hotspot Intel	X	X	X	X
H4 – Radio Tower (74, 117)	Non-Hotspot Intel	X	X	X	X
H4 – Van (334, 270)	Non-Hotspot Intel	O	X	X	O
H5 – AFV (356, 381)	Non-Hotspot Intel	O	X	O	O
H5 – AFV (74, 233)	Non-Hotspot Intel	X	X	X	X
H5 – Checkpoint (360, 440)	Non-Hotspot Intel	X	X	X	X
H5 – Checkpoint (57, 141)	Non-Hotspot Intel	O	X	O	X
H7 – Barrel (240, 349)	Hotspot Intel	X	O	X	O
H7 – Tire Fire (236, 299)	Hotspot Intel	X	O	O	O
H7 – Tire Fire (69, 428)	Hotspot Intel	X	X	X	X
H7 – Tower (427, 295)	Hotspot Intel	O	O	X	X
H9 – Barrel (222, 215)	Hotspot Intel	X	O	O	O
H9 – Tire Fire (176, 155)	Hotspot Intel	X	O	O	X
H9 – Tire Fire (212, 298)	Hotspot Intel	O	X	X	O
H9 – Tire Fire (337, 182)	Hotspot Intel	O	X	O	X
I1 – AFV (237, 109)	Hotspot Intel	O	X	X	O
I1 – AFV (385, 377)	Hotspot Intel	X	O	O	X
I1 – Civilian (231, 65)	Hotspot Intel	X	O	O	O
I1 – Civilian (379, 422)	Hotspot Intel	O	X	O	X
I3 – Checkpoint (329, 71)	Non-Hotspot Intel	X	O	X	X
I3 – Checkpoint (87, 267)	Non-Hotspot Intel	O	O	O	X
I3 – Civilian (328, 305)	Non-Hotspot Intel	O	O	X	O
I3 – RPG (93, 322)	Non-Hotspot Intel	O	X	X	O
I4 – Radio Tower (197, 90)	Hotspot Intel	X	O	O	X

I4 – Radio Tower (357, 94)	Hotspot Intel	X	O	X	O
I4 – Radio Tower (70, 84)	Hotspot Intel	O	X	X	O
I4 – Sedan (404, 241)	Hotspot Intel	O	X	O	X
I4 – Tire Fire (203, 282)	Hotspot Intel	X	X	X	X
I4 – Tire Fire (347, 325)	Hotspot Intel	X	X	O	O
I4 – Tire Fire (97, 337)	Hotspot Intel	O	O	O	X

Intelligence		PR	PS	SR	SS
I8 – AFV (103, 326)	Hotspot Intel	O	X	O	O
I8 – AFV (401, 290)	Hotspot Intel	X	X	X	X
I8 – Checkpoint (433, 215)	Hotspot Intel	O	X	O	X
I8 – Humanitarian Tent (63, 361)	Hotspot Intel	X	O	X	X
I8 – Humanitarian Tent (97, 92)	Hotspot Intel	O	X	X	O
I8 – RPG (102, 169)	Hotspot Intel	O	O	X	X
I9 – AFV (198, 421)	Non-Hotspot Intel	O	O	X	X
I9 – AFV (66, 425)	Non-Hotspot Intel	X	X	X	X
I9 – Checkpoint (352, 87)	Non-Hotspot Intel	O	O	X	X
I9 – RPG (357, 155)	Non-Hotspot Intel	X	X	O	O
J6 – Radio Tower (304, 54)	Non-Hotspot Intel	X	X	O	O
J6 – Radio Tower (367, 135)	Non-Hotspot Intel	O	O	X	X
J6 – Radio Tower (416, 60)	Non-Hotspot Intel	X	X	O	O
J6 – Tire Fire (62, 220)	Non-Hotspot Intel	X	X	X	X
J6 – Van (182, 218)	Non-Hotspot Intel	X	X	X	X
J7 – Checkpoint (423, 224)	Hotspot Intel	O	O	X	X
J7 – Civilian (169, 26)	Hotspot Intel	X	X	O	O
J7 – RPG (282, 43)	Hotspot Intel	O	O	X	O
J7 – RPG (428, 279)	Hotspot Intel	X	X	X	X

J7 – RPG (91, 216)	Hotspot Intel	O	O	O	X
J8 – Barrel (417, 260)	Hotspot Intel	X	X	O	O
J8 – Radio Tower (434, 94)	Hotspot Intel	X	X	X	X
J8 – Radio Tower (96, 313)	Hotspot Intel	O	O	X	X
J8 – Tire Fire (103, 235)	Hotspot Intel	O	X	O	O
J8 – Tire Fire (225, 200)	Hotspot Intel	X	O	O	O
J9 – Radio Tower (231, 49)	Non-Hotspot Intel	X	O	O	O
J9 – Radio Tower (235, 137)	Non-Hotspot Intel	O	X	O	O
J9 – Radio Tower (52, 134)	Non-Hotspot Intel	X	O	O	X
J9 – Radio Tower (55, 57)	Non-Hotspot Intel	X	O	X	O
J9 – Sedan (254, 213)	Non-Hotspot Intel	X	X	X	X

Note. X = Individual is provided this piece of intelligence via mission briefings from command at the start of the mission. O = Individual does not have this piece of intelligence. He or she may

APPENDIX E

INTERNAL REVIEW BOARD HUMAN SUBJECTS PERMISSION LETTER

University of Central Florida Institutional Review Board
Office of Research & Commercialization
12201 Research Parkway, Suite 501
Orlando, Florida 32826-3246
Telephone: 407-823-2901 or 407-882-2276
www.research.ucf.edu/compliance/irb.html

Approval of Human Research

From: **UCF Institutional Review Board #1**
FWA00000351, IRB00001138

To: **Leslie Ann DeChurch** and Co-PIs: **Daniel Doty, Eduardo Salas, Miliani Jimenez, Shawn Burke, Toshio Murase**

Date: **June 06, 2011**

Dear Researcher:

On 6/6/2011, the IRB approved the following minor modification to human participant research until 03/10/2012 inclusive:

Type of Review:	IRB Addendum and Modification Request Form
Modification Type:	Informed Consent form revision to add same extra credit or monetary compensation for participants in the secondary study as in the primary study.
Project Title:	VOSS: Creating functionally collaborative infrastructure in virtual organizations
Investigator:	Leslie Ann DeChurch
IRB Number:	SBE-08-05766
Funding Agency:	National Science Foundation
Grant Title:	
Research ID:	1050152 - 1049506

The Continuing Review Application must be submitted 30days prior to the expiration date for studies that were previously expedited, and 60 days prior to the expiration date for research that was previously reviewed at a convened meeting. Do not make changes to the study (i.e., protocol, methodology, consent form, personnel, site, etc.) before obtaining IRB approval. A Modification Form **cannot** be used to extend the approval period of a study. All forms may be completed and submitted online at https://iris.research.ucf.edu .

If continuing review approval is not granted before the expiration date of 03/10/2012, approval of this research expires on that date. When you have completed your research, please submit a Study Closure request in iRIS so that IRB records will be accurate.

Use of the approved, stamped consent document(s) is required. The new form supersedes all previous versions, which are now invalid for further use. Only approved investigators (or other approved key study personnel) may solicit consent for research participation. Participants or their representatives must receive a copy of the consent form(s).

In the conduct of this research, you are responsible to follow the requirements of the Investigator Manual.

On behalf of Kendra Dimond Campbell, MA, JD, UCF IRB Interim Chair, this letter is signed by:

Signature applied by Joanne Muratori on 06/06/2011 11:06:33 AM EDT

IRB Coordinator

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