A MULTILEVEL FIELD STUDY OF FUNCTIONAL LEADERSHIP: THE ROLE OF SITUATIONAL LOAD AND INDIVIDUAL DIFFERENCES

by

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ABSTRACT

A MULTILEVEL FIELD STUDY OF FUNCTIONAL LEADERSHIP: THE ROLE OF SITUATIONAL LOAD AND INDIVIDUAL DIFFERENCES

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This field research provides a multilevel longitudinal examination of the functional component behaviors leaders use to optimize team performance under varying situationally-demanding conditions. Empirical support was found for situationally-specific leadership behaviors among two leadership levels nested within a hierarchical action team. Results suggest that: 1) a wider range of leader behaviors (i.e., cognitive, emotional, and social) than previously explored taxonomies are meaningful when examined at multiple levels within the team, 2) the nature of the situation drives the differential functionality of leader behaviors, and 3) that both subordinate leader- and team-compositional individual differences can enhance or serve as leader substitutes in team performance outcomes.

INTRODUCTION

Leadership literature has long acknowledged that leader behaviors are meaningful, especially when related to leadership effectiveness and team performance (Derue, Nahrgang, Wellman, & Humphrey, 2011; Halpin & Winer, 1957; Judge & Piccolo, 2004; Judge, Piccolo, & Ilies, 2004). A leader capable of recognizing and adapting to complex situational changes to maximize advantages and minimize threats, provides a unique competence in competitive organizations (Ilgen & Pulakos, 1999; Smith, Ford, & Kozlowski, 1997). This adaptive leader role become especially important in today's uncertain and often turbulent work environment (Burke, Pierce, & Salas, 2006; Day, 2001; Kozlowski, Watola, Jensen, Kim, & Botero, 2009). One area that is experiencing a resurgence of research is the functional role a leader plays by providing requisite behaviors designed to address key team needs and promote effective performance within challenging team settings (McGrath, 1962; Hackman & Walton, 1986).

For example, theoretical and empirical research from this functional perspective has focused on critical, role-based leader actions and team relationships (Fleishman, Mumford, Zaccaro, Levin, Korotkin, & Hein, 1991; Zaccaro, Rittman, & Marks, 2001), reviews and meta-analyses of effective leader behavior taxonomies (Burke, Stagl, Klein, Goodwin, Salas, & Halpin, 2006; McIntyre & Salas, 1995), adaptive leader and team

characteristics (Burke at al., 2006; Ilgen & Pulakos, 1999; Kozlowski et al., 2009; Smith et al., 1997), and leadership processes designed to facilitate team growth and performance (Morgeson, DeRue, & Karam, 2010; Zaccaro, Heinen & Shuffler, 2009). Yet despite the proliferation of this leadership research, there exists little work that empirically tests these critical taxonomies of functional leader behaviors in realistically changing environmental situations.

There are at least three gaps within extant leadership research concerning the interplay among roles, behaviors, actions, and processes a leader performs and the anticipated positive team performance outcomes. First, although there exist a number of recently validated and influential taxonomies of effective leader behaviors (Burke et al., 2006; Morgeson et al., 2010; Zaccaro et al., 2001), they primarily emphasize cognitive and social/relational leader competencies. The exclusion of more emotionally-oriented leader behaviors results in less than optimal taxonomies by failing to incorporate a more comprehensive range of behaviors that describe how leaders help teams deal and cope with potential, perceived, and actual emotionally-laden situations. Additionally, there exists little to no empirical research specifically testing how targeted leader behaviors within the existing taxonomies are tailored according to different situational loads and associated team needs.

Second, while conceptualization and operationalization of team leadership has experienced a resurgence in recent years (Day, Gronn, & Salas, 2004, 2006; Morgeson et al, 2010), this research focused on shared or distributed leadership roles within teams. It has not, however, explored potential differential roles that *multiple* leaders play within

the common hierarchical leadership structures that exist in singular teams from a more traditional levels-of-leadership (Jacobs & Jaques, 1987, 1990, 1991; Katz & Kahn, 1978) or leadership system perspective. Finally, there is little empirical research that explores how both subordinate and team-compositional characteristics may moderate the relationship between key leader behaviors and successful team performance outcomes.

Therefore, the current study contributes to the literature by conducting a field study that empirically examines these three specific areas in which the leader(s) behavior-team performance relationship is differentially affected. Using a functional leadership perspective, it is argued that the leadership literature can benefit from widening existing leader taxonomies to include component behaviors across cognitive, social, *and* emotional dimensions. Combining these component behaviors in a singular leadership "system" taxonomy provides an opportunity to examine how component leader behaviors can occur differentially across *multiple* leader levels within a team and can be subsequently tailored to address specific situationally-demanding requirements. Additionally, key adaptive dispositional traits (i.e., grit, resilience) are reviewed for their potential leader- and team-compositional contribution to either the enhancement of, or as leader substitutes for team performance outcomes. To date, this functional leader perspective has not been specifically tested, especially across distinct situational scenarios.

Functional Leadership

A functional leader engages in a set of requisite behaviors to address individual, task, and/or team needs in order to facilitate goal or task accomplishment (McGrath, 1962; Hackman & Walton, 1986). Typically, team needs emerge from a spectrum of domains that range from task, team and individual requirements (Adair, 2007). These team needs also surface during distinct phases (i.e., transition vs. action) of a performance episode (Morgeson et al., 2010). Zaccaro and colleagues (2001) argued that this wide variety of needs represents a leader's functional approach to social problem solving. From this perspective, the leader must be capable of *diagnosing* problems that have the potential for derailing on-going or future team actions required for goal accomplishment, *generate* and rapidly compare feasible and timely solutions to address team needs, and then issue directions for *implementation* (Fleishman et al., 1991; Mumford, Zaccaro, Harding, Fleishman, & Reiter-Palmon, 1993).

This functional perspective greatly assists in defining a leader's role. First, it illustrates the mandate for a leader – an individual that serves to provide direction for a collective purpose and overall operation management across domains to accomplish a task (Zaccaro, 2001). Depending on the magnitude of the team need(s) and the potential for multiple team needs surfacing simultaneously, the leader's subsequent behaviors and actions play pivotal roles in team performance outcomes. Second, it acknowledges that leadership does not occur in a vacuum and incorporates the vital interplay between the leader and the led. As the next section illustrates, this leader-led interaction can occur across multiple levels.

Functional leadership can emerge from multiple levels within the team. This approach addresses issues of construct discontinuity voiced by Kozlowski and Klein (2000) in which multilevel research can uncover whether or not leadership not only looks different but also has differential influence at separate hierarchical levels. This conceptualization is not new. Indeed, early work on stratified systems established frameworks outlining that fundamental leadership processes are different (i.e., skills/behaviors required) depending on level of organization in which the leader operates (Jaques, 1978; Jacobs & Jaques, 1987; Katz & Kahn, 1978). The influence of leader behavior at multiple levels (i.e., direct, operational, and strategic) and the resultant states and outcomes are highly related, especially when attempting to deal or cope with uncertain and unpredictable problem sets (e.g., Ashford, 1986; Edwards & Morrison, 1994; Mumford, Friedrich, Caughron, & Byrne, 2007).

Although this body of research acknowledges the existence of common core competencies across leader levels (i.e., setting direction, aligning team purpose, managing commitment to goal; Morgeson et al., 2010), the literature also emphasizes the criticality of key cognitive and relational competencies based on the roles and responsibilities associated with specific leader levels (Mumford et al., 2007). Technology and globalization has also helped redefine traditional stratified system theory's early level delineations regarding greater scope of control and operational time span planning during upward progression of the leadership ladder. This becomes particularly important for action teams (i.e., surgery teams, investigative units, military elements, and expedition teams) that require not only highly specialized leader skills, but also demand collective

and cross-trained skills to conduct complex, time-constrained activities in non-routine and challenging environments (Sundstrom, 1999).

In organizations that adopt a traditional hierarchical structure, there typically exists a system of leadership within a team that can consist of multiple layers. This structure facilitates separate but mutually supporting sub-team roles, synchronized action, and decentralized execution (Hannah, Jennings, & Nobel, 1020; Mueller-Hanson, White, Dorsey, & Pulakos, 2005). Although more conceptualizations of shared leadership (i.e., Conger & Pearce, 2003; Morgeson, DeRue, & Karam, 2010) and dynamic leadership delegation (Klein, Ziegart, Knight, & Xiao, 2006) have recently surfaced in the literature, very little research has empirically examined cross-level effects of multiple layered leaders within a singular team. Using the delineations of leader level established in stratified systems research, the literal (in terms of physical proximity) and figurative (in terms of hierarchical chain of command) distance of a leader from the direct action of *leading* may have a differential impact on performance outcomes (Katz & Kahn, 1978; Jacobs & Jaques, 1987; Jaques, 1978). This may be due to the direct or tactical closeness to the action being carried out and how it aids in ancillary cognitive and interpersonal effects such as: better situational awareness; expeditious exchange of new orders or direction; and a sense of shared consequences (c.f. Hunt, 1991; Mumford et al., 2007). Based on being in a more direct, hands-on, and tactical role, an argument could be made that the *direct*-level leader in an action team is required to exhibit more relationally-oriented behaviors (e.g., emotion and social) to lead, motivate, and influence behavior of immediate subordinates (Hunt, 1991; Jacobs & Jaques, 1990). In contrast, the

operational-level action team leader, while not that far removed from the tactical action, is expected to play a more significant role as plan developer and strategic thinker, compared to the direct ground executer. In this sense, an argument could be made that the operational leader may necessarily rely more on the traditional and higher order complement of cognitive behaviors while providing direction to his/her subordinates (Mumford et al., 2007; Philips & Hunt, 1992). Due to the plausible, yet theoretical nature of this issue, combined with the scarcity of empirical research examining multiple levels of leadership across differing cognitive-, emotional-, and social-behaviors within teams, the proposed research attempts to approach this question in an exploratory fashion across the three hypotheses.

Component Leader Behaviors

Current leadership literature is replete with effective leader behavior and/or characteristic taxonomies (see Burke et al., 2006; Morgeson et al., 2010; Zaccaro et al., 2001). Yet despite nearly a century of extensive compilations of optimal leader components, the vast majority focus on behaviors, traits, and characteristics that fall within cognitive and social/interpersonal realms (see LePine, 2003; LePine, Colquitt, & Erez, 2000; Tucker & Gunther, 2009). While these two areas are virtually undisputed in their importance, it is possible that the literature could gain additional insight by widening the focus of effective leader taxonomies by including leader skill sets associated with emotional competencies. One of the primary drivers for this key inclusion is that leader behaviors are different in stressful environments (Hannah, Uhl-Bien, Avolio, & Cavarretta, 2009; Uhl-Bien, Marion, & McKelvery, 2007). The notable,

obvious difference lies in the increased complexity, chaos, and potential mortality salience of these unique contexts. These extreme conditions demand maximal performance (Mangos & Arnold, 2008) to address not only the increased cognitive- and team social dynamics, but must also address the self- and team- focused emotional competencies required to handle potential, perceived, and actual emotionally-demanding situations.

Zaccaro, Weis, & Chen (in press) argued that these high consequence situations impose a wider variety of cognitive, emotional, and social demands, each uniquely requiring situationally-specific leader competencies. Additionally, leaders must choose behaviors that are tailored to be functional at a particular phase of a performance episode and match the situational load of the anticipated or actual environment. The authors argue that when associated leader behaviors and competencies are aligned with the specific demands of cognitive, emotional, and social situations one can more comprehensively examine the incremental influence across category when attempting to predict overall team performance.

In order to provide structure for this wider, three component taxonomy of leader behaviors, the current research borrows from the Marks, Mathieu, & Zaccaro (2001) taxonomy that illustrate that team processes take place in a recursive, multiphase episodic framework (also see Amos, Weis, & Zaccaro, forthcoming). This episodic framework consists of two distinct phases; a transition and action phase, both of which foster different types of team- and taskwork. Within the transition phase, the leader and team members orient the majority of their activity towards assessment, evaluation, planning,

and preparation/training for an assigned or potential team goal or objective. Transition phases occur both prior to and following an action phase. During the action phase, the leader and team members participate in actions and activities that are directly related to goal or mission accomplishment. Mark et al. (2001) also described the phases and entire performance episode as situationally dependent in which the time periods vary in terms of both onset and cycle times. This study extends the Marks et al. (2001) two-phase framework into three more focused stages with preparation and recovery reflecting the former (e.g., transition) and execution (e.g., action) the later. This expansion was done to offer increased fidelity of how leaders approach the varied roles they fulfill in a performance episode (see also Kozlowski et al., 2009). This also assists in providing a modified leader behavior paradigm framework (DeRue et al., 2011) to categorize proposed behaviors.

Table 1 provides a depiction of the proposed leadership behaviors across performance episode and behavior category. The taxonomy of behaviors was created from a comprehensive analysis of existing literature and empirical sources (see final column in Table 1; Amos, Weis, & Zaccaro, forthcoming). Based upon a combination of existing literature (see Burke et al., 2006; Gick & Holyoak, 1987; Morgeso et al., 2010; Pulakos, Mueller-Hanson, & Nelson, forthcoming; Smith et al., 1997; White et al., 2005; Zaccaro, Kemp, & Bader, 2004) and parallel grounded theory research designed to extract key leader adaptive behaviors from critical incidents (Amos, Weis, Grim, & Zaccaro, under review), three-to-four of the highest rated leader behaviors were selected that aligned with both the temporal phase (e.g., *preparation*, *execution*, *recovery*) of the

performance episode and the three proposed critical behavior components: (e.g., *cognitive*: focus on understanding situation and planning response; *emotional*: focus on maintaining motivational focus and deploying effective coping responses; and *social*: focus on working collaboratively, maintaining relationships, and frame of reference changing to interpret and manage changing social cues).

Table 1. Adaptive Readiness Leader Behaviors by Phase & Load (from Amos, Weis, Zaccaro, forthcoming)

Phase *	Load	Behavior	Empirical Sources
Preparation	Cognitive	Structure & plan for upcoming mission and scenario	Cannon-Bowers, Tannenbaum, Salas, & Volpe (1995); Cannon-Bowers, Salas, & Milanovich (1999)
		Define mission	Fleishman & Zaccaro (1992); Prince & Salas (1993)
		Establish expectations & goals	Dickinson & McIntyre (1997); O'Leary-Kelly, Martocchio, & Frink (1994); Prussia & Kinicki (1996); Saavedra, Early, & Van dyne (1993)
		Train & develop element	Colquitt, LePine, & Noe (2000); Mueller-Hanson et al. (2005); Smith, Ford & Kozlowski (1997); Stagl, Salas, & Fiore (2007)
	Emotional	Recognize emotional states	Cannon-Bowers, Tannenbaum, Salas, & Volpe (1995); Cherniss, Grimm, & Liautaud (2010)
		Motivate element towards end goal	Fleishman & Zaccaro (1992); Locke & Latham (2004); Tziner, Fisher, Senior, & Weisberg (2007)
		Prepares for emotional contingencies	Cannon-Bowers, Tannenbaum, Salas, & Volpe (1995); Pekrun, Elliot, & Maier (2006)
	Social	Assesses social dynamics of element (teamwork)	Cannon-Bowers, Tannenbaum, Salas, & Volpe (1995); Cherniss, Grimm, & Liautaud (2010)
		Plans for contingencies & back-up (cross-	Cannon-Bowers, Tannenbaum, Salas, & Volpe (1995); Simons, Pellad, & Smith (1999); Simons & Peterson

		training) behavior	(2000); Smolek, Hoffman, & Moran (1999); Van de Vliert, Euwema, & Huismans (1995)
		Creates cohesion & trust	Beal, Cohen, Burke, & McLendon (2003); Sweeney, Thompson, & Blanton (2009)
Execution	Cognitive	Operational environmental scanning	Zaccaro, Banks, Kiechel-Koles, Kemp, & Bader (2009)
		Monitors team progress and situation	Cannon-Bowers, Tannenbaum, Salas, & Volpe (1995); Jentsch, Barnett, Bowers, & Salas (1999)
		Provides sense-making of ongoing situation	Gioia & Chittipeddi (1991); Nelson, Zaccaro, & Herman (2010); Weick (1993)
		Coordinates element activities	Brannick, Prince, Prince, & Salas (1992); Brannick, Roach, & Salas (1993); Fleishman & Zaccaro (1992); Zalesny, Salas, & Prince (1995)
	Emotional	Recognizes emotional impact of developing situation	Cannon-Bowers, Tannenbaum, Salas, & Volpe (1995); Cherniss, Grimm, & Liautaud (2010)
		Manages emotions (self & others)	Cannon-Bowers, Tannenbaum, Salas, & Volpe (1995); Cherniss, Grimm, & Liautaud (2010)
		Tailors own emotional displays	Cannon-Bowers, Tannenbaum, Salas, & Volpe (1995); Cherniss, Grimm, & Liautaud (2010)
	Social	Recognizes developing team social dynamics (positive or negative)	Cherniss, Grimm, & Liautaud (2010); Dickinson & McIntyre (1997)
		Motivates others toward goal/mission accomplishment	Fleishman & Zaccaro (1992); Locke & Latham (2004); Tziner, Fisher, Senior, & Weisberg (2007); Zaccaro, Banks, Kiechel-Koles, Kemp, & Bader (2009)
		Sense-giving: communicates adaptive response to element	Gioia & Chittipeddi (1991); Nelson, Zaccaro, & Herman (2010); Weick (1993)
Recovery	Cognitive	Review/assess	Zaccaro, Banks, Kiechel-Koles, Kemp,

		action(s)	& Bader (2009)
		Provides feedback & materiel resources	DeRue & Wellman, 2009; Kluger & DeNisi (1996)
		Updates strategies for retraining	Cannon-Bowers, Tannenbaum, Salas, & Volpe (1995); Stout, Cannon-Bowers, Salas, & Milanovich (1999)
	Emotional	Recognizes emotional impact of mission on element	Abrahams (2007); Cannon-Bowers, Tannenbaum, Salas, & Volpe (1995); Cherniss, Grimm, & Liautaud (2010)
		Understands emotional needs of individual/team	Abrahams (2007); Cannon-Bowers, Tannenbaum, Salas, & Volpe (1995)
		Provides support resources for individual/team recovery	Abrahams (2007); Cherniss, Grimm, & Liautaud (2010)
	Social	Understands social dynamics and impact of mission	Cherniss, Grimm, & Liautaud (2010); Fiske & Taylor (1991); Zaccaro (2001)
		Strategically manages interpersonal dynamics	Zaccaro, Banks, Kiechel-Koles, Kemp, & Bader (2009)
		Supports social climate	Cannon-Bowers, Tannenbaum, Salas, & Volpe (1995); Cherniss, Grimm, & Liautaud (2010)

There are *cognitive behaviors* associated with each phase: *preparation* (structure and plan for upcoming mission and scenario; define mission; establish expectations and goals; train and develop element); *execution* (operational environmental scanning; monitor team progress and situation; provide sense-making of on-going situation; coordinate element activities); and *recovery* (review/assess actions; provide feedback and materiel resources; update strategies for retraining). Those behaviors associated with *emotional-oriented behaviors* include: *preparation* (recognize emotional states; motivate

element towards end goal; prepares for emotional contingencies); *execution* (recognize emotional impact of developing situation; manage emotions – self and others; tailor own emotional displays); and *recovery* (recognize emotional impact of mission on element; understand emotional needs of individual/team; provide support resources for individual/team recovery). Finally, for *social-oriented behaviors*: *preparation* (assess social dynamics of element; plan for contingencies and back-up behavior; create cohesion and trust); *execution* (recognize developing team social dynamics – positive or negative; motivate others toward goal/mission accomplishment; sense-giving by communicating adaptive response to element); and *recovery* (understand social dynamics and impact of mission; strategically manages interpersonal dynamics; support social climate).

The cognitive leader behaviors in the model all possess a task-oriented perspective. Similar to task-oriented taxonomies developed over time (Fleishman et al., 1991; DeRue et al., 2011), these behaviors have a functional approach as to how a leader assists and directs others to solve problems. As such, these behaviors are designed to identify a need required to promote movement toward an established goal (i.e., preparation), enact a strategy to direct, monitor, and synchronize progress towards goal accomplishment (i.e., execution), and then review past action to ensure successes are maintained and errors are corrected (i.e., recovery).

Lord (1977) argued that group or team maintenance is incomplete without full consideration of socio-emotional factors. The emotional and social leader behaviors tend to fall within a more encompassing category of relational-oriented behaviors. In this sense, the leader fulfills a role as team builder to closely monitor needs associated with

interpersonal dynamics and behave in ways that foster team well-being and respect. To maintain a happy and healthy work environment, better-than-average leaders typically attain and demonstrate acceptable levels of emotional intelligence in order to continually identify, assess, and shape the emotions of self and others (Salovey & Meyer, 1990). Although often overlooked in traditional action-team environments, these continued emotional behaviors are critical for psychological well-being and performance in typical action team situations due to the extreme stress they engender (Sweeney, 2007, 2010). Leaders must focus on ensuring teams are emotionally prepared for these unique environments by providing motivation and discussing the potential rigors/stressors (i.e., preparation), monitoring and managing emotional impacts during the action (i.e., execution), and evaluating needs for internal/external resources upon completion (i.e., recovery) (see Edmondson, 1999; Marks et al., 2001). The social behaviors follow a similar pattern but are designed to build the trust, confidence, and cohesion needed when lives depend on both individual and team performance. Leaders first work to build these components using hard, realistic and shared training experiences (i.e., preparation), promoting positive communication and sense-giving during the event (i.e., execution), and reinforcing the social climate at the events conclusion (i.e., recovery).

Despite differences in task- and relations-oriented behavior, the functional leadership research converges in examining how leaders set direction, manage the operation of others, and attempt to align the interests of the collective organization and direct performance to accomplish tasks (Avolio, Walumba, & Weber, 2009; Barling, Christie, & Hoption, 2010; Fleishman et al., 1991; Morgeson et al., 2010). In the

introduction, an argument was made that a differential pattern of behaviors may be required for leaders to "adjust, adapt, and flex their response to unpredictable and potentially catastrophic changes" in order to survive and succeed in these unique environments (Norton, 2010, p. 143). While a prediction of leader behaviors being positively related to individual and team behavior does not stray far from the well established association in mainstream literature, it does establish a foundation for examining a wider range of leader behaviors within a stressful and unpredictable environment (e.g., Day, 2001; DeRue & Wellman, 2009; Dragoni, Tesluk, Russel, & Oh, 2009). More importantly, past exclusion of emotionally-based leader behaviors in existing leader taxonomies leaves an incomplete picture of the comprehensive set of competencies leaders require to capably address all team needs. Therefore, the first hypothesis serves as a condition setter for solidifying the rationale for the proposed research and to further complement existing leader behavior taxonomies. These leader behaviors are predicted to have a direct effect on team performance:

> ***Hypothesis 1a.*** *Leaders rated higher in cognitive-based leadership behaviors will outperform their lower rated counterparts on proximal team performance.*
>
> ***Hypothesis 1b.*** *Leaders rated higher in emotional-based leadership behaviors will outperform their lower rated counterparts on proximal team performance.*
>
> ***Hypothesis 1c****. Leaders rated higher in social-based leadership behaviors will outperform their lower rated counterparts on proximal team performance.*
>
> ***Hypothesis 1d.*** *Each of the three leader component behaviors (i.e., cognitive, emotional, social) will explain unique variance when entered simultaneously.*

Situational Load

Examining a more comprehensive taxonomy of leader behaviors greatly assists in addressing "what" leaders can do to facilitate effective team performance, but still does not answer the question of "when" these behaviors can and should be applied. Failure to consider the contextual or situational influence reduces specific explanatory power and can result in broad generalizations that may not reflect the true reality in which many of these action teams operate (Hannah et al., 2009; Johns, 2006). Indeed, there are numerous situational factors that could potentially moderate the manner in which a leader perceives, interprets, and reacts to critical events (Avolio, 2007; Boal & Hooijberg, 2000). By examining context across the proposed leader component behaviors, potential boundary conditions that exist can be identified to further our understanding of the complexities of leader behavior and performance (Leonard & Howitt, 2007; Porter & McLaughlin, 2006). Additionally, context or situational factors can also drive requirements for combinations of leader resources and behaviors in which the "instrumentality could vary with the task or situation" (Lord, 1977, p. 115). The situational characteristics could therefore create distinctive needs within the team which in turn require behavioral matching on the part of the leader (Fiedler, 1964; Kerr & Jermier, 1978; Kerr, Schriesheim, Murphy, & Stogdill, 1974; Morgeson et al., 2010).

Zaccaro and colleagues (in press) suggest that these challenges and demands can be grouped into categories pertaining to how many cognitive, social, and emotional resources (or load) are required for effective adaptive team action and subsequent team performance. Forced to adapt to an emergency/crisis situation or dealing with uncertain

and unpredictable work situations may engender both high cognitive and emotional load. Time pressure, chaotic environments, and threat can individually and/or collectively affect both the leader and teams' interpretation of the situation and test the resources available for dealing with and adapting to these new factors (White et al., 2005; Wong, 2004). While most leadership literature predominantly emphasize the cognitive load of these extreme situations, the leader must also deal with an accumulation of psycho-emotional stress induced by chaotic and unpredictable environments or situations that are physically and/or emotionally laborious (Ashforth & Humphrey, 1993, 1995; Marks et al., 2001; Salovey & Meyer, 1990). Attempting to interpret these incoming signals and regulate one's personal responses can lead to intellectual, physical, or emotional exhaustion and requires surplus energy consumption (Gaines & Jermier, 1983; Mulki, Jaramillo, & Lorcander, 2006).

Moreover, situations may vary in terms of the cognitive, emotional, and social demands they present, with many requiring a greater degree of emotional and social readiness rather than cognitive readiness. In an effort to expand upon this notion, a new conceptualization of emotional load moves beyond the conventional description of environmental or job demands that strain available resources and defines the construct as "presence of high levels of emotion-inducing stimuli in the operating environment that require the deployment of mental, social, and emotional coping resources to maintain operational effectiveness" (Zaccaro et al., in press, p. TBD). Notwithstanding the stress and anxiety associated with leading in these environments, existing literature recommends the development of coping strategies and leader empathy rather than

providing guidance on targeted behavioral actions that may have an inoculating effect on the powerful consequences of psychological trauma (Kammeyer-Mueller, Judge, & Scott, 2009; Kellett, Humphrey, & Sleeth, 2002). Additionally, no direction is provided to illuminate the importance of these supplemental components in any portion of a performance episode (e.g., preparation, execution, and recovery). The consequence of this act of omission lies in the reactive nature that many action-oriented organizations use to address potential negative outcomes of a traumatic emotional experience. The combined stress of these non-routine environments also tests the fabric of social relationships. Making interpersonal decisions with life or death consequences adds an element of complexity that may exceed existing social resources (Zaccaro, 2001) and requires additional behaviors and roles for the leader to enact (Hooijberg, 1996).

Based on these conceptualizations it is proposed that in order to be optimally functional, leaders must modify their behaviors based on situational demands (Zaccaro, Gilbert, Thor, & Mumford, 1991). Leaders who match their behaviors to the predominate situational load (i.e., cognitive-, emotional-, and social-) within the targeted scenario will outperform leaders who do not. Therefore, it is proposed that the situational load of the targeted scenario will moderate the relationship between leader behaviors and proximal individual and team outcomes such that:

> ***Hypothesis 2a.*** *In scenarios that are predominantly cognitive in nature, cognitive leadership behaviors predict team performance over and above social and emotional leadership behaviors.*
>
> ***Hypothesis 2b.*** *In scenarios that are predominantly emotional in nature, emotional leadership behaviors predict team performance over and above cognitive and social behaviors.*

Hypothesis 2c. *In scenarios that are predominantly social in nature, social leadership behaviors predict team performance over and above cognitive and emotional behaviors.*

Individual Differences and Leader Substitutes Theory

In additional to the proximal leader behaviors of team performance, there exist some distal antecedent traits (e.g., proneness to adaptability, grit, and hardiness) that are receiving recent attention due to their ability to promote determination and resiliency in the face of challenges. These dispositional predictors are expected to serve two key purposes. First, from a leader perspective, they are expected to be a significant antecedent predictor of leader behaviors and functions. Second, from a compositional team perspective, these dispositional competencies can serve as potential moderators to attenuate the leader behavior, especially in the case in which adaptive team members may be able to overcome the lack of effective leadership behaviors.

One potentially important individual difference is an ability to quickly and efficiently adapt to changing situational or environmental conditions. In today's highly competitive and pressure-filled corporate environment, a premium is placed on organizations that can either attract or nurture leaders who possess the capability for adapting to and excelling in an unpredictable and often chaotic environment (Cascio, 2003; Ilgen & Pulakos, 1999). This adaptability reflects the capacity to respond effectively to new dynamic situations (White et al. 2005). Leaders with this aptitude engender what Zaccaro and colleagues (in press) describe as a readiness for complex, non-routine problem situations that require the functional engagement in adaptive behavior along core cognitive, social, and emotional capacities. The adaptive leader must

possess both the cognitive and behavioral capacity to recognize subtle cues that signify impending change; engage in problem solving processes to develop, assess, and select a strategy designed to address the change; and subsequently execute, reassess, and continuously learn from implementation and impart that sense-making to their subordinates (also see Randall, Resnick, and DeChurch, 2011). As such, adaptability can serve as an important individual difference to predict pre-dispositions toward readiness for training, organizational change, technology, and the ability to adaptively respond to task, position, or environmentally driven changes. Additionally, since this adaptive construct is a product of existing and developing KSAOs (Pulakos Arad, Donovan, & Plamondon, 2000; Tucker & Gunther, 2009), it reflects an ability that can change and grow based on newly acquired experiences. Thus, it may serve as a potentially important indicator for the potential to behave or lead more effectively in a highly-stressful, action team environment.

Past research on individuals who were deemed more successful and influential than their counterparts found that they typically possessed traits above and beyond that of normal ability (Cox, 1926; Galton, 1869; Terman & Oden, 1947). While ability was still critically important, these individuals also possessed "zeal" and "persistence of motive and effort," leading Duckworth, Peterson, Matthews, and Kelly (2007) to propose the construct of grit as a positive, non-cognitive trait that taps into an individual's passion for a long-term goal and continued motivation to achieve that goal in the face of obstacles or challenges. They provided consistent evidence suggesting that grit is negatively related to general intelligence and successfully predicts achievement and performance across a

wide variety of samples and settings (2007; Duckworth & Quinn, 2009), as well as positively predicting happiness and life satisfaction (Singh & Jha, 2008). Duckworth and colleagues believe this dual-component (e.g., passion and perseverance) of grit to be the crucial differentiator from similar constructs (e.g., hardiness: Maddi, 2007), specifically that grittier individuals could adapt to changes within their environment and maintain their determination and motivation over *long* periods of time despite experiences with failure and adversity. Their passion and commitment towards the long-term objective is the overriding factor that provides the stamina required to persist amid challenges and set-backs.

A second dispositional trait that is expected to facilitate effective responses to task, situational, and environmental changes is resilient nature of hardiness or resilience (Bartone, 1991, 2006, 2007; Maddi, 2007). This trait reflects a three-component construct focused on aligning internal perspectives and external influences. Its first two components represent internal states in which one possesses a strong tendency to view experiences as interesting and a conviction that they have the ability to influence and potentially control the events they in turn experience (Bartone, 2006; Kobasa, 1979). The third component reflects using the first two as filters to interpret and make sense of external events, such that the individual tends to approach significant change-events as learning experiences that in turn facilitate meaning-making and results in a resilient ability to recover from traumatic events more efficiently than less-hardy individuals (Bonnano, 2004; Maddi, 1967). In an age where action teams are expected to ply their trade in highly stressful and sometimes traumatic environments, possessing a hardy

disposition has proven to be a significant attenuator to the development of depression, combat stress, post traumatic stress disorder (PTSD), and suicide ideation (Bartone, 1996; 2000; Florian, Mikulincer, & Taubman, 1995; Westman, 1990). As an extension of this post-action or recovery perspective, it is plausible that possessing this resilient nature should also assist in mission preparation (i.e., possessing the proper mindset for the upcoming assignment and understanding the potential contingency behaviors and actions), as well as facilitating appropriate actions in the execution phase.

The current research proposes that adaptive potential as measured by the I-ADAPT as well as the dispositional competencies of grit and resilience serve as critical antecedent traits necessary for an individual to adapt to changes within his/her environment, particularly with respect to impacts on motivation and desire to achieve an established and relevant goal. The ability to adapt, persevere amid the myriad of environmental challenges and unanticipated obstacles, and exhibit a resilient nature represents a highly valued competency. How well or how poorly one recognizes, understands, and adapts to the advantages and/or disadvantages of a situation can significantly determine eventual success or failure. The compressed timeline, often insufficient information and communication flow, increased complexity of task and team monitoring, and high degree of consequences all combine to create an environment that is understandably overwhelming (Kozlowski & Bell, 2008; Mueller-Hanson et al., 2005). When one adds the necessity to continue the action, even in the event that past decisions resulted in catastrophic loss, a resilient disposition that promotes perseverance should prove beneficial.

To examine this dispositional trait effect across leader level, two methodological approaches are utilized. In the first, it is anticipated that both the sub-unit leader's adaptive dispositional individual differences and the superior leader's component behaviors will have positive direct effects upon team performance measured at the sub-unit level. Thus, adaptive dispositional traits should predict performance at like level of analysis and leader behaviors at the superior level should influence how well or poorly his or her subordinate units perform. Additionally, it is possible that a subordinate's dispositional traits could potentially moderate the hierarchically superior leader – subordinate team performance relationship. From a substitutes-for-leadership (Kerr & Jermier, 1978) perspective, these sub-level leader dispositional traits may serve as characteristics that make general leadership less important and predictive of performance outcomes. Sub-level leaders that possess these adaptive traits may indeed serve as neutralizers for less than optimal behavior execution at their respective superior leader's level. While research is equivocal regarding the empirical support for this leadership theory (see Dionne, Yammarino, Atwater, & James, 2002; Keller, 2006), the targeted traits have yet to be examined and have not been examined across leader levels in a singular analysis. Additionally, as a further extension of earlier predictions, situational load is also included as a potential moderator (see Figure 1), yielding Hypothesis 3a:

> ***Hypothesis 3a.*** *Subordinate leader individual differences will moderate the positive relationship between the superior leader's behavior and the subordinate team performance such that subordinates with higher individual difference scores on I-Adapt, Grit and Resilience will display a steeper positive slope than those with lower scores.*

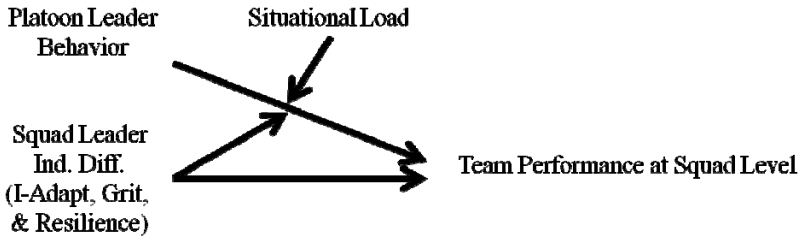

Figure 1. Squad Leader Individual Difference Moderation.

To further explore cross-level effects based on the dispositional individual differences, the second method employs a team compositional approach. Significant relationships have been found between team performance and numerous combinations of team compositions based on traits, states, and functions (Bell, 2007; Lau & Murnighan, 2005; Marks et al., 2001). Although originally conceptualized as adaptive individual-based effectiveness and performance predictors, it is plausible that a leader's grit and resilience operationalized respectively as an unwavering determination and calculated persistence toward accomplishing a complex task and the ability to rapidly recover from a highly traumatic event or experience could result in a sense of competency contagion on the part of the entire team (cf. Barsade, 2002; Hatfield, Cacioppo, & Rapson, 1993; Johnson, 2008). In this sense, a team composition of these adaptive traits may also directly impact team performance and potentially moderate (or substitute for) the team's direct leader (see Figure 2).

> ***Hypothesis 3b.*** *Team composition individual differences will moderate the positive relationship between the leader's behavior and the team performance such that teams with higher individual difference means on I-Adapt, Grit and Resilience will display a steeper positive slope than those with lower scores.*

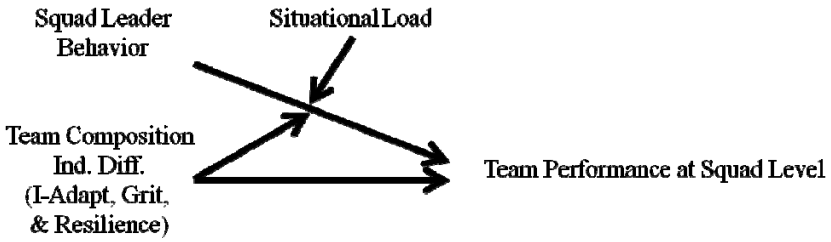

Figure 2. Team Composition of Individual Differences Moderation.

METHOD

Participants

A total of 785 (655 soldiers, 99 squad leaders, and 31 platoon leaders) male participants volunteered to contribute to the study. The participants were active duty soldiers from a United States Army brigade located in the mid-west. Based on the established hierarchical nature of this military unit, the participants were already nested within 99 existing squads (consisting of approximately 4-8 squad members each, led by a squad leader) which were in turn nested within 31 platoons (consisting of approximately 2-4 squads each, led by a platoon leader). Participant ages ranged between 18-41 with an average of 23 years (average age of leaders was 26). Ninety-five percent of the leaders had at least one tour in a combat environment and the average length of military service was just under 6 years. Racial demographics were not captured. All participants completed informed consent forms and received no credit for participation.

Setting and Task

The setting and task for this study involved the observation of intact leaders' and their respective units' performance during three separate 36-hour situational training exercise (STX) scenarios as part of the overall unit's final training requirement prior to a real-world combat deployment to Afghanistan. The military population was selected for three reasons: 1) it represents a valid action-team environment in which there is a

recognized hierarchical leadership structure (with multiple leaders within a singular unit) requiring high levels of intra-team coordination in high-consequence situations; 2) pre-established leader/team member roles and responsibilities; and 3) enabled observation and data collection in a highly realistic field environment. The three STX scenarios placed leaders and their units in distinctive operational situations and were coded by military subject matter experts (SMEs) to reflect three separate, dominant situational loads (i.e., cognitive-, emotional-, and social-load) based on unique requirements of leader behaviors and actions.

Measures

Demographic information was obtained and individual difference measures were assessed via survey prior to unit participation in the STX scenarios. The leader behaviors and team performance outcomes were externally rated by professional coach/mentors (C/Ms) assigned to the Army's Joint Readiness Training Center (JRTC) while the unit was executing each of the three STX scenarios. It should be noted that C/Ms are specially selected for assignment at JRTC based on previous exemplary military performance of duties in the position(s) they are assigned to mentor. The C/Ms perform this role between 8-10 rotations per year, which includes observing the performance of units, assisting in engagement control, mentoring unit leaders and teams on emerging doctrine in order to improve unit performance, and conducting both informal and formal after action reviews (AARs).

Behavioral Competency Measure Checklist. The behavioral competency measure checklist was created for this research and consists of the spectrum of leader behaviors,

by phase and load, discussed earlier in Table 1. The final version (see Appendix A) was streamlined to highlight each of the component leader behaviors that could be assessed by the C/Ms using a 5-point Likert scale. The checklist captures quality of selected leader behaviors throughout the scenarios as well as an overall assessment of leader and team performance. The current study achieved Cronbach alpha (on the overall scale) of .96 and .91, .89, and .91 for cognitive, emotional, and social sub-scales respectively.

I-ADAPT-M. The 55-item I-ADAPT-M measure (Ployhart & Bleise, 2006) evaluates an individual difference propensity to display adaptive behavior. Questions pertaining to individual preferences, styles, and habits at work are scored on a five-point *strongly agree - strongly disagree* scale. Scale items reflect sub-dimensions related to the Pulakos et al. (2000) Crisis, Cultural, Work Stress, Interpersonal, Physical, Creativity, Uncertainty, and Learning adaptability dimensions. Past research using the I-ADAPT-M measure suggests strong support for convergent and discriminant validity, as well as high internal consistency (α = .92-93; Ployhart & Bleise, 2006) for the overall scale and five of the eight dimensions exceeding .70 (exceptions were uncertainty, α = .54; learning, α = .66; and physical, α = .64; see Ployhart, Saltz, Mayer, & Bliese, 2002). The current study achieved Cronbach alpha (on the overall scale) of .95 and .96 for full sample and leaders-only respectively.

Grit. The 12-item Grit scale (Duckworth et al., 2007) evaluates the degree of individual perseverance and passion for long-term goals. Participants indicate how much each statement applied to them using a 5-point Likert scale ranging from 1 (*not like me at all*) to 5 (*very much like me*). Past research using the Grit scale suggest high internal

consistency (α = .85) for the overall scale and for each factor (Consistency of Interests, α = .84; Perseverance of Effort, α = .78). The current study achieved Cronbach alpha (on the overall scale) of .71 and .72 for full sample and leaders-only respectively.

Resiliency/Hardiness. The 15-item Dispositional Resiliency Scale (DRS-15; Bartone, 2009) is a shortened version of the original 30- and 45-item measures (Bartone, Ursano, Wright, & Ingraham, 1989; Bartone, 1991) and evaluates individual difference preferences toward resilience, good health, and performance under stressful conditions. It uses a four point Likert response scale, with anchors of 0 (*not at all true*), 1 (*a little true*), 2 (*quite true*), and 3 (*completely true*). The items are broken down into three primary resiliency components: commitment (CM), control (CO), and challenge (CH). Past research suggests good internal consistency (α = .82-.84) for the overall scale with corresponding test-retest reliability coefficients for the three subscales (Commitment, α = .75; Control, α = .58; and Challenge, α = .81; Bartone, 2007). The current study achieved Cronbach alpha (on the overall scale) of .82 and .80 for full sample and leaders-only respectively.

Procedure

Data collection occurred in three phases; the first two taking place prior to the exercise and the third during the STX scenarios. The first phase consisted of a 1-hour block of instruction for the C/Ms on the background of the study, operationalization of each of the leader behaviors on the Leader Behavior Checklist, and multiple practice trials to ascertain C/M reliability on the proper rating of the leader's behavior quality and overall performance. This rater reliability issue was a critical component of the training

due to finite team coverage options. Recall that there were 99 squads and 31 platoons, each requiring a C/M rater for each of the three STX scenarios. This coverage made multiple rater-per-leader untenable. While not ideal due to the potential of same-source bias, this coverage method was an acceptable risk based on the benefits from gathering the rich, real-time data in this unique field environment. Following each practice trial, discrepancies on the quality of leader behaviors greater than 2 points (on a 5-point scale) were discussed and rationalized until the C/Ms achieved 100% agreement. The final practice trial resulted in no discrepancies in ratings.

The second phase consisted of the administration of demographic and individual difference survey to all participants. The final phase consisted of C/M ratings of all leaders (i.e., squad and platoon) as they executed their responsibilities during each of the three STX scenarios. Using the Behavioral Checklist, the C/Ms recorded: 1) the quality of effort the leader devoted to the cognitive, emotional, and social aspects across the preparation, execution, and recovery phases of their assigned mission; and 2) the team's overall performance in that STX scenarios.

RESULTS

Descriptive Data and Intercorrelations

The means, standard deviations, and intercorrelations for the observed study variables are presented in Table 2. Of note, the three leader component behaviors are highly correlated and range between .78 - .85. These high correlations could indicate a multicollinearity issue in which the component behaviors do not possess enough distinctiveness and provide redundant information. This in turn can increase the standard error of estimates of the β's and lead to decreased reliability and potentially misleading results. Tests examining the variance inflation factor (VIF) and tolerarance (1/VIF; indicated in parentheses) yielded scores of 4.5 (0.22), 8.4 (0.12), and 5.4 (0.19) for cognitive-emotional, cognitive-social, and emotional-social behaviors respectively. According to Bowerman and O'Connell (1990), VIFs greater than 1 could bias the model. However, associated tolerance scores, while not ideal, were not less than 0.1, which serves as a benchmark for serious multicollinearity problems (Menard, 1995; Myers, 1990). While these high correlations can potentially affect calculations regarding individual predictors, they should not overly bias the predictive power or reliability of the model as a whole (Cohen, Cohen, West, & Aiken, 2003).

To further test the distinctiveness of the three components, confirmatory factor analyses were run on a one-, two- (cognitive and relational), and three-factor (cognitive,

emotional, social) model (see Table 3). The model structure indicated better fit as all three component behaviors were selected as latent variables. While the root mean squared error of approximation (RMSEA) in the third model remains slightly above the established threshold of .05 (Pedhazur & Schmelkin, 1991), it approaches the .05 cut-off, remains a significantly better fit than the previous models, and produces ideal supplemental indices of good fit as indicated by the greater-than .95 results on the Normed Fit Index (NFI), Comparative Fit Index (CFI), and Goodness of Fit Index (GFI).

Table 2. Means, Standard Deviations, and Intercorrelations between Study Variables

Variable	*M*	*SD*	1	2	3	4	5	6	7
1. Leader Effectiveness	3.37	0.73							
2. Team Performance	3.30	0.67	.67**						
3. Cognitive Behavior	3.28	0.60	.78**	.61**					
4. Emotional Behavior	3.12	0.62	.72**	.56**	.85**				
5. Social Behavior	3.13	0.64	.57**	.48**	.78**	.86**			
6. I-Adapt Score	4.05	0.48	.10	.11	.14*	.10	.06		
7. Grit Score	3.71	0.56	.00	.03	.03	.00	.00	.62**	
8. Resilience Score	3.14	0.45	.16**	.10	.17*	.09	.08	.63**	.65**

Note. *N* = 333 cases at the Level-1 data set (leader ratings and scores across three scenarios and/or surveys). ** indicates significance at $p < 001$; * indicates significance at $p < 05$.

Table 3. Confirmatory Factor Analysis (CFA) of Leader Component Behaviors

Model	Latent Variables	Chi-Square	df	RMSEA	NFI	CFI	GFI
1	1 (All)	96.75	9	0.170	0.95	0.96	0.91
2	2 (Cog & Relational)	62.65	8	0.142	0.97	0.97	0.94
3	3 (Cog, Emot, Soc)	18.48	6	0.078	0.99	0.99	0.98

Hypothesis 1

In order to address the nested nature of the field data – three scenarios nested within each participant, which in turn were nested within specific groups (i.e., squads and

platoons) – Hierarchical Linear Modeling (HLM; Raudenbush & Bryk, 2002) was used (see Appendix B for full model equations). Hypothesis 1 was first tested with "squad leaders" nested within platoons as the leader focus. This required a 3-level HLM analysis with the primary DV (team performance at the squad level) across the three scenarios at Level 1; squad leader cognitive, emotional, and social behaviors at level 2; nested within their respective platoons at Level 3. Table 4 presents the results from five iterative models. The fully unconditional intercept-only model (no predictors; Model 1) was significant $\beta_{00} = 3.30$, $t(25) = 38.13$, indicating that the externally rated mean of team performance was slightly above the mid-point on the 5-point scale. Models 2-4 represent means-as-outcomes models and indicate that when squad leader component behaviors are entered as separate predictors of team performance, all three behaviors (cognitive: $\gamma_{010} = 0.68$, $t(54) = 6.76$; emotional: $\gamma_{010} = 0.67$, $t(54) = 5.19$; social: $\gamma_{010} = 0.70$, $t(54) = 7.72$, respectively) provide evidence that increased leader component behaviors had significant positive effects on team performance. Additionally, while the largest percentage of variance remains within the individual scenario observation level (85-88%), all three leader behaviors indicate significant between-platoon variation. This pattern remains mostly consistent when all three leader component behaviors are entered into the Level 2 equation. As indicated in Model 5, both cognitive ($\gamma_{010} = 0.52$, $t(52) = 3.72$) and social ($\gamma_{030} = 0.55$, $t(52) = 3.96$) leader behaviors continue to produce significantly positive effects on performance in the full equation model.

Table 4. Fixed Effects Estimates (Top) and Variance-Covariance Estimates (Bottom) for Models of Squad Leaders' Behaviors on Team Performance

	Model 1	Model 2	Model 3	Model 4	Model 5
			Fixed effects		
Intercept	3.30 (.087)**	3.30 (.057)**	3.29 (.059)**	3.30 (.054)**	3.30 (.052)**
Level 2					
Cog. beh.		0.68 (.101)**			0.52 (.141)**
Emo. beh.			0.67 (.128)**		-0.35 (.193)
Soc. beh.				0.70 (.090)**	0.55 (.138)**
			Random parameters		
σ^2	0.30 (.034)	0.28 (.031)	0.29 (.033)	0.29 (.032)	0.28 (.031)
$\tau\pi$	0.00008 (.022)	0.00004 (.021)	0.00006 (.022)	0.00005 (.021)	0.00004 (.021)
$\tau\beta$	0.16 (.054)	0.05 (.024)	0.05 (.025)	0.04 (.021)	0.04 (.020)
Level 1 variance	0.652	0.848	0.853	0.879	0.875
Level 2 variance	0.00	0.00	0.00	0.00	0.00
Level 3 variance	0.348	0.151	0.147	0.121	0.125
Level 3 Coeff. (sd)	0.16 (.399sd)**	0.05 (.227sd)**	0.05 (.234sd)**	0.04 (.205sd)**	0.04 (.192sd)**
Deviance (df)	444.91 (4)	407.85 (5)	418.45 (5)	409.64 (5)	402.59 (7)

Note. Level 1 (observations) $N = 243$; Level 2 (Squad) $N = 81$; Level 3 (Platoon) $N = 26$. Standard errors are in parentheses. Cog. beh. = leader's cognitive behavior; Emo. beh. = leader's emotional behavior; Soc. beh. = leader's social behavior; * $p < .05$; ** $p < .001$.

Table 5 focuses on "platoon leader" behaviors, requiring only a 2-level HLM analysis with the primary DV (team performance at the platoon level) across the three scenarios at Level 1 and platoon leader component behavior at Level 2. Models 2-4 again indicate that when platoon leader component behaviors are entered as separate predictors of for team performance, all three behaviors (cognitive: $\beta_{01} = 0.50$, $t(26) = 3.91$; emotional: $\beta_{01} = 0.27$, $t(26) = 2.16$; social: $\beta_{01} = 0.24$, $t(26) = 3.99$, respectively) provide evidence that increased leader component behaviors had significant positive effects on

team performance. This pattern changes slightly when all three leader component behaviors are entered simultaneously into the Level-2 equation. As indicated in Model 5, cognitive (β_{01} = 0.77, $t(24) = 3.15$) leader behaviors produce significantly positive effects on team performance. Platoon leader's social behaviors approached significance (β_{02} = 0.27, $t(24) = 1.86$, $p < .08$) and a significant but net suppression effect occurs regarding emotional leader behaviors (β_{02} = -0.60, $t(24) = -2.11$).

Table 5. Fixed Effects Estimates (Top) and Variance-Covariance Estimates (Bottom) for Models of Platoon Leaders' Behaviors on Team Performance

	Model 1	Model 2	Model 3	Model 4	Model 5
			Fixed effects		
Intercept	3.39 (.076)**	3.34 (.069)**	3.34 (.074)**	3.34 (.074)**	3.34 (.066)**
Level 2					
Cog. beh.		0.50 (.129)**			0.77 (.244)*
Emo. beh.			0.27 (.127)*		- 0.60 (.283)*
Soc. beh.				0.24 (.061)**	0.27 (.143)
			Random parameters		
σ^2	0.29	0.37	0.29	0.29	0.29
$\tau\beta$	0.15	0.07	0.14	0.14	0.12
ICC	0.341	0.159	0.326	0.326	0.293
Level 2 Coeff. (sd)	0.15 (.386sd)**	0.12 (.345sd)**	0.14 (.378sd)**	0.14 (.371sd)**	0.12 (.343sd)**
Deviance (df)	606.12 (2)	599.25 (2)	603.65 (2)	603.29 (2)	598.70 (2)

Note. Level 1 (observations) $N = 349$; Level 2 (Platoon) $N = 28$. Standard errors are in parentheses. Cog. beh. = leader's cognitive behavior; Emo. beh. = leader's emotional behavior; Soc. beh. = leader's social behavior; * $p < .05$; ** $p < .001$.

When examined holistically, the results suggest that leader behaviors at both levels (i.e., squad and platoon leader) are meaningful. As evidenced by both individual and combined component approaches towards leader behavior effects on ratings of team

performance, all of the component leader behaviors contribute to the outcome of interest with cognitive behavior assuming most of the variance, providing partial support for Hypothesis 1.

Hypotheses 2

Hypothesis 2 examined the moderating impact of scenario situational load on the relationship between leader behaviors and team performance outcomes. Effects-codes were created to test for the moderating effect of dominant situational load. For the first set of analyses, the effects codes were utilized to represent the comparison between the emotional load scenario ("E") with the mean of group means from the cognitive ("C") and social ("S") scenarios; and the comparison between the social load scenario with the mean of group means from of the cognitive and emotional scenarios respectively. These analyses were then repeated using effects codes primarily to examine the comparison between the cognitive load scenario with the mean of group means from of the emotional and social scenarios.

When accounting for the situational load in high consequence scenarios, results from Hypothesis 2 suggest that the nature of the situation does contribute to the functionality of the leader behaviors on team performance outcomes. Table 6 displays the results of the mixed models by including both the Level 1 situational load effects codes ("E" & "S" in Model 3; "C" & "S" in Model 4) and Level 2 squad leader component behaviors. In Model 3, there were three main effects. First, both cognitive (γ_{010} = 0.53, $t(51) = 2.94$) and social (γ_{030} = 0.52, $t(51) = 2.39$) squad leader behaviors had significant positive effects on team performance. There was also a main effect for "S" (γ_{200} = -0.09,

$t(126) = -2.26$) suggesting that overall, the team performance on the social scenario was significantly lower when compared to the other two scenarios. More importantly, there were several significant interactions suggesting the moderating role of situational load. In Model 3, the results suggest that squad leader cognitive behavior does influence the effect of "E" on team behavior ($\gamma_{110} = 0.50$, $t(126) = 2.49$). Increased cognitive behaviors produced a significant positive effect when the situational load is emotional in nature. Squad leader cognitive behavior also interacted with the effect of "S" on team performance ($\gamma_{210} = -0.88$, $t(126) = -4.39$), indicating that increased cognitive behavior in a predominantly social scenario has potential detrimental effects. Social behavior achieved an opposite effect when interacting with the effect of "S" on team behavior. In this case, squad leaders that engaged in more social behavior ($\gamma_{230} = 1.08$, $t(126) = 4.88$) during a predominantly social scenario achieved higher team performance scores (i.e., the "S" slope becomes less negative). These relationships are represented in Figure 3a-b.

Table 6. Fixed Effects Estimates (Top) and Variance-Covariance Estimates (Bottom) for Models of Squad Leaders' Behaviors and Situational Load on Team Performance

	Model 1 ("E" & "S")	Model 2 ("C")	Model 3 ("E" & "S"& Sqd Ldr Beh)	Model 4 ("C" & Sqd Ldr Beh)
		Fixed effects		
Intercept	3.29 (.087)**	3.29 (.087)**	3.30 (.052)**	3.30 (.052)**
Level 1				
"E"	- 0.01 (.050)		- 0.01 (.042)	
"S"	- 0.10 (.050)	- 0.10 (.050)	- 0.10 (.042)*	- 0.10 (.042)*
"C"		0.10 (.050)*		0.10 (.042)*
Level 2				
Cog. beh.			0.53 (.181)*	0.53 (.181)*
Emo. beh.			- 0.35 (.252)	- 0.35 (.252)
Soc. beh.			0.52 (.218)*	0.52 (.218)*
"C" x Cog Beh				0.38 (.200)

"C" x Soc Beh				-0.76 (.222)**
"E" x Cog Beh			0.50 (.200)*	
"S" x Cog Beh			-0.88 (.200)**	-0.88 (.200)**
"S" x Emo Beh			-0.50 (.297)	0.50 (.297)
"S" x Soc Beh			1.08 (.222)**	1.08 (.222)**
		Random parameters		
σ^2	0.30 (.033)	0.30 (.033)	0.22 (.024)	0.22 (.024)
	0.00008 (.022)	0.00008 (.022)	0.00004 (.016)	0.00004 (.016)
	0.16 (.055)	0.16 (.055)	0.04 (.020)	0.04 (.020)
Level 1 variance	0.652	0.652	0.846	0.846
Level 2 variance	0.00	0.00	0.00	0.00
Level 3 variance	0.347	0.347	0.154	0.154
Level 3 Coeff.	0.16 (.400sd)**	0.16 (.400sd)**	0.04 (.211sd)**	0.04 (.211sd)**
Deviance	434.19 (6)	434.19 (6)	340.56 (15)	340.56 (15)

Note. Level 1 (observations) $N = 240$; Level 2 (Squad) $N = 80$; Level 3 (Platoon) $N = 26$. Standard errors are in parentheses. Only interactions that were significant were included in Table. * $p < .05$; ** $p < .001$.

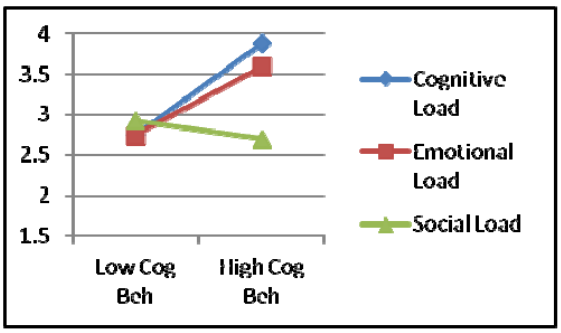

Figure 3a. Squad Leader Cognitive Behavior x Situational Load.

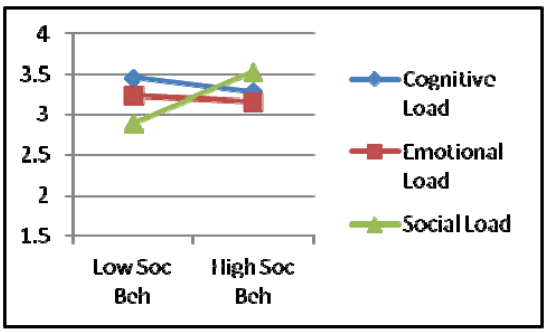

Figure 3b. Squad Leader Social Behavior x Situational Load.

Note. These interactions are displayed graphically by plotting the dependent variable (team performance) and predictor (squad leader behaviors) relationship at each level of the categorical predictor (situational load).

In Model 4, the results indicate an additional main effect of "C" such that, on average, team performance for squad leaders was higher in a cognitive scenario compared to the emotional and social scenarios ($\gamma_{100} = 0.10$, $t(126) = 2.45$). The "C"

effects code also interacted negatively with social squad leader behavior (γ_{130} = -0.76, t(126) = -3.42; the "C" slope becomes less positive) and approached positive significance with squad leader cognitive behavior (γ_{110} = 0.38, t(126) = 1.90; the "C" slope becomes more positive) suggesting that when the scenario was cognitive in nature, squad leader cognitive behaviors played a more important role while social behaviors were significantly less central (see Figures 3a-b).

A similar pattern emerged when the predictor became platoon leader behaviors (Table 7). Platoon performance was, on average, lower for social scenarios (γ_{200} = -0.09, t(319) = -2.22) but higher on cognitive scenarios (γ_{100} = 0.11, t(319) = 2.74) respectively. In Model 3, there were main effects for cognitive behaviors (β_{01} = 0.77, t(24) = 2.38) suggesting higher platoon leader cognitive behaviors were related to higher ratings of team performance and a main effect "S" (β_{20} = -0.11, t(313) = -2.86) suggesting that overall, the team performance on the social scenario was significantly lower than the other two scenarios. Each of the platoon leader component behaviors had significant interactions with the effect of "S" on team performance. Both cognitive (β_{21} = -0.36, t(313) = -2.10; Figure 4a) and emotional (β_{22} = -0.74, t(313) = -3.45; Figure 4b) leader behaviors produced negative weights, suggesting that when the scenario was social in nature, cognitive and emotional behaviors had a reduced effect on team performance (i.e., the L2 slope becomes more negative). Alternatively, platoon leader social behavior (β_{23} = 0.66, t(313) = 4.98; Figure 4c) had a positive interaction with the effect of the "S" variable on team performance, indicating that social behaviors become more related higher team performance when the scenario is social in nature. The only addition that

occurred when using “C” & “S” variable included a significant interaction between social behaviors and the effect of the “C” variable (β_{10} = -0.56, t(313) = -4.98; Figure 4c) suggesting that social behaviors were significantly lower when the scenario was predominantly cognitive in nature.

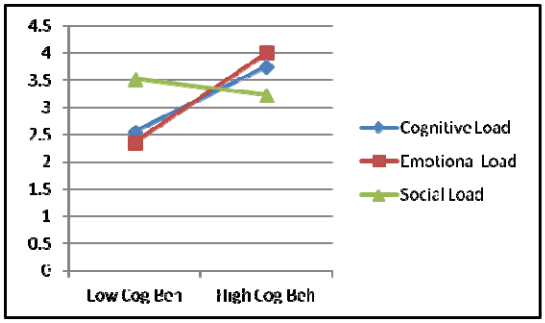

Figure 4a. Platoon Leader Cognitive Behavior x Situational Load.

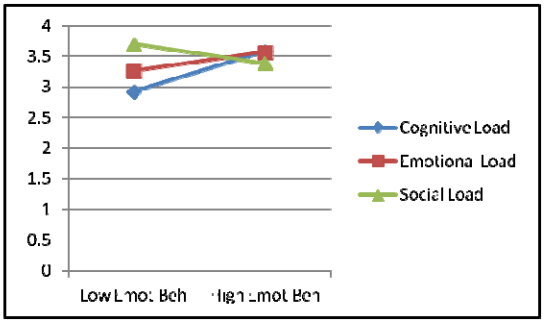

Figure 4b. Platoon Leader Emotional Behavior x Situational Load.

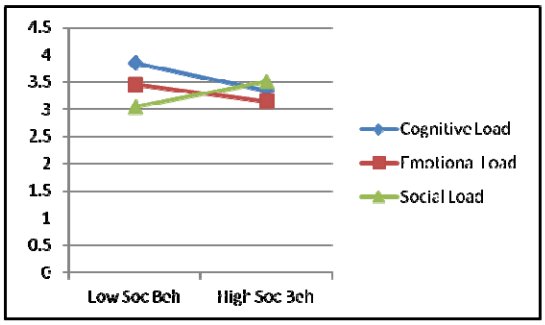

Figure 4c. Platoon Leader Social Behavior x Situational Load.

In terms of uncovering support for a “matching” result as proposed by Hypothesis 2 (i.e., highest leader component behaviors matching the respective situational load of a scenario), only the social component proved significant. Of note, this was true for both levels of leadership. Both squad and platoon leaders who displayed the high levels of social behavior, when the situational load was social in nature, outperformed their peers

in terms of team performance. While the other leader component behaviors trended in proposed directions, they did not consistently achieve significance in matching relationships. Therefore, Hypothesis 2 received only partial support. Potential reasons for these findings are further explored in the discussion section.

Table 7. Fixed Effects Estimates (Top) and Variance-Covariance Estimates (Bottom) for Models of Platoon Leaders' Behaviors and Situational Load on Team Performance

	Model 1 ("E" & "S")	Model 2 ("C")	Model 3 ("E" & "S"& Plt Ldr Beh)	Model 4 ("C" & Plt Ldr Beh)
		Fixed effects		
Intercept	3.34 (.079)**	3.34 (.079)**	3.34 (.072)**	3.34(.072)**
Level 1				
"E"	- 0.02 (.040)		- 0.01 (.038)	
"S"	- 0.09 (.040)*	- 0.09 (.040)*	- 0.11 (.038)*	- 0.11 (.038)*
"C"		0.11 (.040)*		- 0.01 (.038)
Level 2				
Cog. beh.			0.77 (.324)*	0.77 (.324)*
Emo. beh.			- 0.59 (.408)	- 0.59 (.408)
Soc. beh.			0.26 (.246)	0.26 (.246)
"C" x Emo Beh				0.50 (.214)*
"S" x Cog Beh			- 0.36 (.170)*	- 0.36 (.170)*
"S" x Emo Beh			- 0.74 (.214)**	- 0.74 (.214)**
"S" x Soc Beh			0.66 (.132)**	0.66 (.132)**
		Random parameters		
σ^2	0.28	0.28	0.34	0.34
$\tau\pi$	0.15	0.15	0.08	0.08
ICC	0.349	0.349	0.154	0.154
Level 2 Coeff.	0.15 (.387sd) **	0.15 (.387sd) **	0.12 (.347sd) **	0.12 (.347sd) **
Deviance	607.22 (2)	607.22 (2)	573.56 (2)	573.56 (2)

Note. Level 1 (observations) $N = 349$; Level 2 (Platoon) $N = 28$. Standard errors are in parentheses. Only interactions that were significant were included in Table. * $p < .05$; ** $p < .001$.

Hypothesis 3

Hypothesis 3 assumed a leader substitutes approach by examining the moderating effect of subordinate- (Hypothesis 3a) and team compositional (Hypothesis 3b) individual differences on the relationship between hierarchically superior leader behaviors and team performance. Negative interaction terms would signify a "substitute" relationship, such that when subordinate leader (H3a) or team composition (H3b) reported high levels of a targeted individual difference, the hierarchically superior leader's behavior becomes less important on the effect on team performance (i.e., the slope becomes flatter). Alternatively, the leader's behavior would become more important and result in a greater effect when the targeted individual difference was low (i.e., the slope becomes steeper). From an enhancement perspective, as indicated by a positive interaction sign, this relationship is reversed.

For Hypothesis 3a, 3-level HLM analyses were run with situational effect codes at Level 1, squad leader individual differences (i.e., I-Adapt; Grit; Resilience) at Level 2, and supervisor (i.e., platoon leader) behaviors at Level 3. Initial analyses contained both overall scale and sub-component scales for the dispositional measures but due to lack of consistent significant findings in the sub-component measures, only the overall scale results are reported. As indicated in Table 8, the dispositional measures did not surface as main effects. Only the I-Adapt score emerged as a potential moderator, suggesting minimal support for Hypothesis 3a. Squad leaders' I-Adapt scores approach significance as a positive moderator ($\gamma_{013} = 0.44$, $t(58) = 1.87$, $p = .067$) between platoon leaders' social behavior and team performance. This relationship results in a positive

enhancement (as opposed to a substitute) relationship in which platoons leaders displaying higher social behaviors trended towards higher team performance scores when their squad leaders possessed higher I-Adapt scores. Additionally, there was a significant 3-way interaction between social load, squad leader I-Adapt score, and platoon leader social behavior (γ_{213} = 0.66, $t(128) = 2.12$), providing further evidence of the social load and social behavior matching results found in Hypothesis 2, especially as squad leaders display higher I-Adapt scores.

Table 8. Fixed Effects Estimates (Top) and Variance-Covariance Estimates (Bottom) for Models of Platoon Leader Behaviors and Squad Leader Individual Differences on Team Performance

	Model 1 (Load & I-Adapt)	Model 2 (Load & Grit)	Model 3 (Load & Resilience)
	Fixed effects		
Intercept	3.33 (.073)**	3.31 (.075)**	3.33 (.074)**
Level 1			
"E"	*n.s.*	*n.s.*	*n.s.*
"S"	-0.12 (.044)*	-0.12 (.044)*	-0.13 (.044)*
"C"	0.12 (.044)*	0.12 (.044)*	0.12 (.044)*
Level 2			
I-Adapt Score (Sqd Ldr)	*n.s.*	*Not entered*	*Not entered*
Grit Score (Sqd Ldr)	*Not entered*	*n.s.*	*Not entered*
Resilience Score (Sqd Ldr)	*Not entered*	*Not entered*	*n.s.*
Level 3			
Cog. beh. (Plt Ldr)	0.89 (.326)*	0.74 (.338)*	0.75 (.337)*
Emo. beh. (Plt Ldr)	*n.s.*	*n.s.*	*n.s.*
Soc. beh. (Plt Ldr)	*n.s.*	*n.s.*	*n.s.*
Sqd Ldr ID x Plt Ldr Beh	0.44 (.237)	*n.s.*	*n.s.*
"C" x Plt Ldr Emo Beh	0.67 (.245)*	0.63 (.248)*	0.65 (.246)*
"C" x Plt Ldr Soc Beh	-0.63 (.156)**	-0.62 (.160)**	-0.66 (.150)**
"S" x Plt Ldr Emo Beh	-0.99 (.245)**	-0.94 (.248)**	-1.00 (.246)*
"S" x Plt Ldr Soc Beh	0.82 (.156)**	0.83 (.160)**	0.88 (.150)*
"S" x Plt Ldr Soc Beh x Sqd Ldr ID	0.65 (.309)*	*n.s.*	*n.s.*
	Random parameters		
σ^2	0.24 (.026)	0.24 (.026)	0.24 (.026)
$\tau\pi$	0.00006 (.017)	0.00007 (.017)	0.00007 (.017)

$\tau\beta$	0.12 (.040)	0.12 (.040)	0.12 (.040)
Level 1 variance	0.67	0.67	0.67
Level 2 variance	0.00	0.00	0.00
Level 3 variance	0.33	0.33	0.33
Level 3 Coeff.	0.12 (.341sd)**	0.12 (.343sd)**	0.12 (.342sd)**
Deviance	409.05 (27)	412.24 (27)	411.72 (27)

Note. Level 1 (observations) $N = 262$; Level 2 (Squad) $N = 90$; Level 3 (Platoon) $N = 28$. Standard errors are in parentheses. Only interactions that were significant were included in Table. "*n.s*." = not significant. * $p < .05$; ** $p < .001$.

For Hypothesis 3b, HLM was not required due to the absence of nesting issues. In this analysis, team compositional individual differences were examined to determine their potential moderating influence on the relationship between a squad leader behaviors and proximal team performance outcomes. To accomplish this, squad composite scores were aggregated from squad member surveys for each individual difference and assigned to their respective squad leader. Next, interaction terms for each component leader behavior x individual difference were created. Then separate linear regressions were run after selecting for the three types of situational load, with main effects of squad leader behaviors and singular individual differences (i.e., either I-Adapt, Grit, or Resilience) in Step 1 and the newly created interaction terms in Step 2.

Table 9a-c displays the results of this series of hierarchical linear regressions and uncover only partial support for Hypothesis 3b. None of the individual difference variables achieved statistical significance as main effects across the loaded scenarios. Similar to platoon leader cognitive behaviors in Hypothesis 3a, there was a consistent significant main effect for squad leader cognitive behaviors across the targeted individual difference variables on team performance, suggesting that squad leaders who engaged in

higher cognitive behaviors enjoyed higher team performance outcomes. Additionally, there were notable enhancement and leader substitute interactions across the individual differences. Team composition of grit served as a substitute when squad leader cognitive behavior was low (i.e., the slope of team grit became flatter as cognitive behavior increased; B=-1.68, $t(77) = -2.81$). Team resilience also trended this direction as a substitute when squad leader cognitive behavior was low (B=-1.51, $t(77) = -1.92$, p=.059). Alternatively, team resilience enhanced team performance scores when squad leader's displayed higher emotional scores (B=2.17, $t(77) = 2.28$). Team grit also trended this direction as an enhancement variable when squad leader's displayed higher social scores (B=1.21, $t(77) = 1.86$, p=.066). See Figures 5a-d for the interaction graphs.

Table 9a-c. Hierarchical Linear Regressions of Team Compositional Individual Differences, Situational Load, and Squad Leader Behaviors on Team Performance

Table 9a. ***I-Adapt***		**Cognitive Load**			**Emotional Load**			**Social Load**		
Step 1		**B**	***t***	***p***	**B**	***t***	***p***	**B**	***t***	***p***
	I-Adapt	0.00	0.18	.859	-0.22	-1.29	.200	-0.26	-0.91	.367
	Cog Behav	0.68**	3.91	.653	0.44*	3.26	.002	0.22	0.84	.401
	Emo Behav	-0.10	-0.45	.615	0.08	0.45	.656	0.88*	3.32	.001
	Soc Behav	-0.09	-0.51	.859	0.32*	2.48	.015	0.04	0.12	.904
	R^2	.22** $F(4,80)=7.01$			.74** $F(4,80)=60.74$			.39** $F(4,80)=14.17$		
Step 2	I-Adapt	0.00	-0.27	.789	-0.20	-0.19	.853	3.82	1.63	.107
	Cog Behav	2.05	0.55	.583	0.94	0.45	.652	5.09	1.27	.206
	Emo Behav	-3.47	-0.82	.415	-0.23	-0.08	.934	4.41	0.94	.352
	Soc Behav	1.12	0.51	.612	0.10	0.05	.961	-3.29	-0.63	.528
	I-Adapt	-0.36	-0.37	.714	-0.13	-0.24	.808	-1.24	-1.22	.226

	x Cog Behav								
	I-Adapt x Emo Behav	0.88	0.80	.429	0.08	0.11	.910	-0.95	-0.76	.447
	I-Adapt x Soc Behav	-0.32	-0.56	.577	0.06	0.10	.919	0.86	0.64	.523
	R^2	.20** $F(7,77)=3.99$			.73** $F(7,77)=33.46$			.42** $F(7,77)=9.51$		
	ΔR^2	.02			-.01			.03		

Table 9b. *Grit*		**Cognitive Load**			**Emotional Load**			**Social Load**		
Step 1		**B**	***t***	***p***	**B**	***t***	***p***	**B**	***t***	***p***
	Grit	0.00	-0.87	.390	0.01	0.06	.954	0.38	1.76	.082
	Cog Behav	0.68**	4.00	.000	0.40*	2.99	.004	0.28	1.11	.271
	Emo Behav	-0.10	-0.46	.646	0.12	0.66	.515	0.78*	2.97	.004
	Soc Behav	-0.09	-0.87	.390	0.32*	2.47	.016	0.03	0.10	.923
	R^2	.23** $F(4,80)=7.26$			.73** $F(4,80)=59.09$			.40** $F(4,80)=15.13$		
Step 2	Grit	-0.01	-1.11	.272	-0.11	-0.18	.860	-1.67	-0.91	.367
	Cog Behav	6.55*	3.12	.003	0.36	0.25	.806	3.28	1.03	.307
	Emo Behav	-3.36	-1.44	.154	1.69	0.83	.409	0.27	0.08	.940
	Soc Behav	-4.24	-1.92	.059	-1.40	-0.77	.446	-4.60	-1.34	.185
	Grit x Cog Behav	-1.68*	-2.81	.006	0.00	0.02	.982	-0.85	-0.96	.342
	Grit x Emo Behav	0.92	1.36	.179	-0.45	-0.78	.438	0.17	0.16	.871
	Grit x Soc Behav	1.21	1.86	.066	0.49	0.94	.348	1.30	1.35	.180
	R^2	.32** $F(7,77)=6.70$			.73** $F(7,77)=33.03$			.40** $F(7,77)=9.02$		
	ΔR^2	.09*			.00			-.02		

Table 9c.	**Cognitive Load**	**Emotional Load**	**Social Load**

Resilience										
Step 1		**B**	***t***	***p***	**B**	***t***	***P***	**B**	***t***	***p***
	Resilience	0.00	-0.75	.457	0.43*	3.19	.002	0.22	0.92	.362
	Cog Behav	0.69**	4.03	.000	0.09	0.50	.617	0.24	0.95	.344
	Emo Behav	-0.10	-0.45	.651	0.31*	2.43	.017	0.85*	3.23	.002
	Soc Behav	-0.10	-0.58	.564	-0.15	-1.01	.317	0.04	0.12	.907
	R^2	.23** $F(4,80)=7.19$			.74** $F(4,80)=60.09$			.39** $F(4,80)=14.18$		
Step 2	Resilience	-0.01	-0.73	.465	-0.76	-1.15	.256	-1.33	-0.54	.588
	Cog Behav	5.18*	2.20	.031	0.13	0.09	.927	6.45*	2.00	.049
	Emo Behav	-6.50*	-2.30	.024	0.95	0.45	.653	0.31	0.08	.936
	Soc Behav	0.72	0.38	.706	-0.87	-0.50	.621	-7.11	-1.70	.094
	Resilience x Cog Behav	-1.51	-1.92	.059	0.09	0.20	.843	-2.01	-1.92	.059
	Resilience x Emo Behav	2.17*	2.28	.025	-0.29	-0.41	.684	0.19	0.15	.885
	Resilience x Soc Behav	-0.29	-0.46	.645	0.40	0.67	.503	2.32	1.70	.094
	R^2	.28** $F(7,77)=5.56$			.73** $F(7,77)=33.70$			.40** $F(7,77)=8.90$		
	ΔR^2	.05*			-.01			.01		

Note. * $p < .05$; ** $p < .001$.

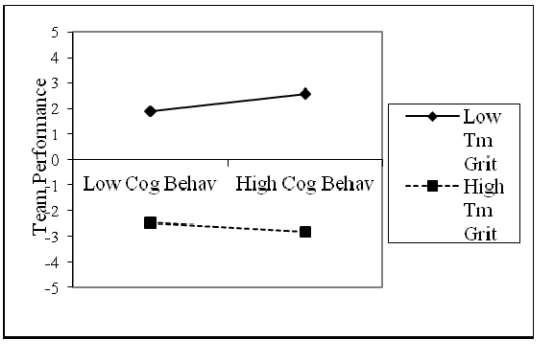

Figure 5a. Cognitive Behavior x Grit under Cognitive Load

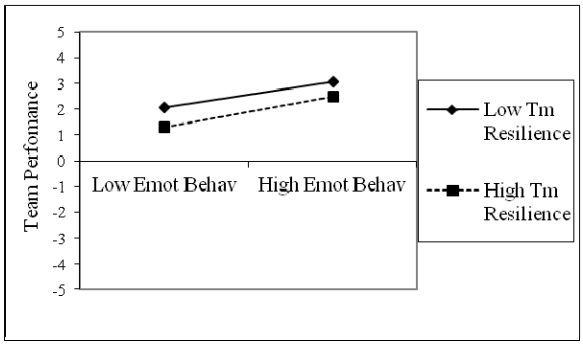

Figure 5b. Emotional Behavior x Resilience under Cognitive Load

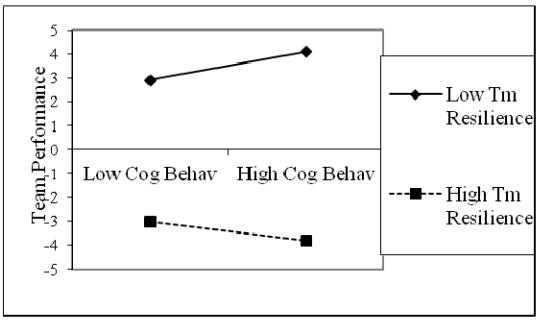

Figure 5c. Cognitive Behavior x Resilience under Cognitive Load

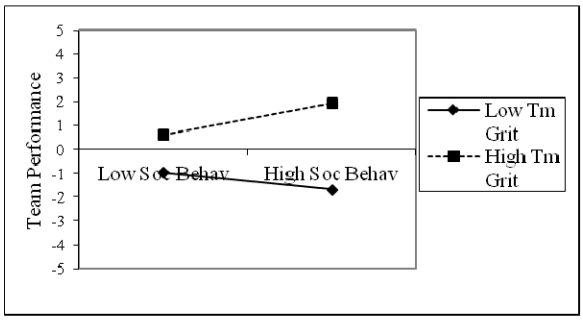

Figure 5d. Social Behavior x Grit under Cognitive Load

When the situational load was emotional in nature, squad leader cognitive and social behaviors produced consistent significant main effects for both cognitive and social behaviors, suggesting that squad leaders who engaged in higher cognitive behaviors, as well as social behaviors enjoyed higher team performance outcomes. There were no significant team composition individual difference main effects, nor individual difference x squad leader behavior interactions. Finally, under conditions of social load, only squad leader social behaviors produced consistent significant main effects. Again, although none of the team composition individual differences reached statistical significance as main effects, one did emerge as potential leader substitute. Team

resilience trended negatively when interacting with squad leader cognitive behavior, suggesting that the resilience slope became less steep as cognitive behavior increased; B=-2.01, $t(77) = -1.92$, $p=.059$; see Figure 6).

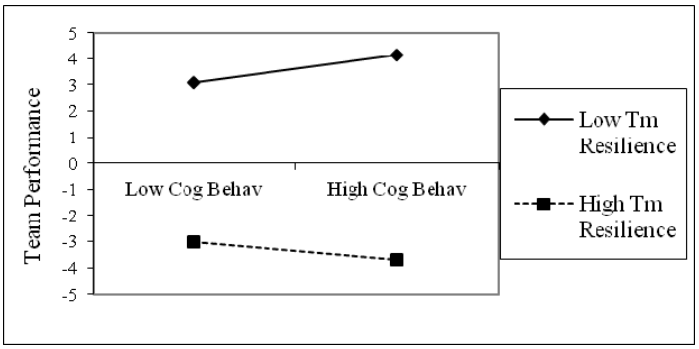

Figure 6. **Cognitive Behavior x Resilience under Social Load**

DISCUSSION

The purpose of this research was to test functional leadership theory in a highly realistic environment using intact action teams with multiple hierarchical leaders. The setting and sample provided a unique opportunity to examine how multiple leaders tailor their behaviors within three distinct situationally-loaded scenarios in order to facilitate optimal team performance. Results suggest that: 1) a wider range of leader behaviors (i.e., cognitive, emotional, and social) than previously explored taxonomies are meaningful when examined at multiple levels within the team, 2) the nature of the situation serves to drive the differential functionality of leader behaviors, and that 3) specific leader- and team-compositional individual differences can enhance or serve as leader substitutes in team performance outcomes.

Extant leadership has traditionally emphasized taxonomies that consisted primarily of cognitive and social/interpersonal leader approaches, and typically assessed their effectiveness from a singular behavioral perspective (Avolio, Sosik, Jung, & Berson, 2003; Fleishman et al., 1991). While useful in establishing classifications and typologies, past research left an incomplete picture regarding "what" and "when" leader behaviors are most important. The current research attempts to provide potential boundary conditions to further illuminate these pressing concerns. Results from Hypothesis 1, exploring both singular- and combined component approaches towards

leader behavior effects (within intact teams) on team performance in a field environment, suggest that a wider complement of component leader behaviors (i.e., cognitive, emotional, and social) contribute to the outcome of interest.

From the individual component perspective, when the leader behaviors were entered separately into the hierarchical linear model, they all produced significant positive main effects for squad and platoon leaders on external ratings of team performance. When the leader behavior components were combined and entered simultaneously, only cognitive leader behaviors remained a significant predictor for performance. Squad leaders' social behaviors tended to produce a positive effect on team performance while platoon leaders' emotional behaviors generated a negative effect on team performance. Although muliticollinearity of the leadership behaviors could be partially responsible for the suppression effects that produced negative coefficients on team performance, it is conceivable that the level of leadership within the team does indeed connote a differential relationship with subordinates. For example, while performing in a more direct and hands-on supervisory role, the results suggest that squad leaders may rely on behaviors that are not only cognitively efficient but also facilitate small-unit team coordination and synchronization with regards to team performance. Alternatively, due to their more operationally-oriented role, platoon leaders may out of tactical necessity need to emotionally remove themselves from unit dynamics in order to facilitate optimal team performance. These results provide an interesting level-of-leader alternative to recent advances in emotional processes and behaviors (Ashkanasy & Tse, 2000; Caruso & Salovey, 2004; Humphrey, 2002). While emotion management may be a

key characteristic for an effective leadership behavioral repertoire (see Kaplan, Cortina, et al., under review), it may indeed play a differential role according to the level or position in which the leader operates (Jacob & Jaques, 1987, 1991; Katz & Kahn, 1978).

Similar to extant leadership research, it is not surprising that cognitive leader behaviors for both squad and platoon leaders emerge as the most important and significant contributor to positive results in the current scenarios. This result adds to the literature by providing confirmatory evidence for the importance of cognitive leader behaviors within intact action teams and under highly realistic, natural environments. More importantly, when examined holistically, the current research stresses the importance of viewing the leader effects from a hierarchical level perspective. The overall pattern of results suggests that squad leaders (i.e., more direct-level, tactically-oriented leaders) rely more on a combination of primarily cognitive and social behaviors to achieve optimal team performance while platoon leaders (i.e., more mid-level, operationally-oriented leaders) tend to maximize cognitive and downplay emotional behaviors.

Situational Load

In a recent meta-analysis, DeRue and colleagues conducted an exhaustive search of trait and behavioral theories of leadership (2011). While they found support that leader behaviors explained more variance in leadership effectiveness outcomes than more traditional leader trait approaches, they acknowledged that there may be critical situational factors (e.g., Fiedler, 1967; House & Mitchell, 1974; Humphrey, Morgeson, & Mannor, 2009) that moderate the behavior-leadership effectiveness relationship. Using a

situational load (i.e., cognitive-, emotional-, and social-load) framework developed by Zaccaro et al. (in press), the current study was able to empirically test how three distinct, situationally loaded scenarios influenced the leader-team performance relationship at two separate levels of leadership.

When accounting for the situational load in high consequence scenarios, results from Hypothesis 2 suggest that the nature of the situation drives the functionality of the leader behaviors on team-level performance outcomes. Both sets of leaders (i.e., squad and platoon leaders) produced positive main effects for cognitive leader behavior and cognitively loaded scenarios, as well as negative main effects for socially loaded scenarios. Leaders who performed more cognitive behaviors tended to achieve higher team performance ratings and, on average, team performance was higher on cognitively-oriented scenarios. Based on traditional leadership literature and the military's emphasis on leaders' tactical and technical competence training, these results were unsurprising. The consistent, negative main effect across both levels of leaders on socially-loaded scenarios (i.e., on average, team performance was lower on socially-oriented scenarios) provides further evidence that an overemphasis on cognitively-oriented problem sets may overshadow the requirement for developing better social acumen and problem-solving strategies. However, the positive main effect that emerged for squad leader's social leader behaviors (i.e., more social behaviors equated to higher ratings of team performance) may suggest that the lack of a robust social skill set may be more related to leadership level and the potentially different social problems (i.e., boundary spanning skills; see Morgeson, DeRue, & Karam, 2010; Zaccaro et al., 2001).

More importantly, the component leader behaviors displayed differential effects when interacting with situational load. When the situational load was primarily cognitive in nature, higher squad leader social behaviors resulted in lower team performance, while their higher cognitive behaviors approached significance in higher team performance. Platoon leaders displayed similar negative results with higher social behaviors but interestingly showed that higher emotional behaviors in a cognitive scenario were related to better team performance ratings. Taken from a holistic perspective, squad leader cognitive behaviors seem to become more important while their social behaviors become less so in these cognitively-laden situations. For platoon leaders, emotional behaviors tend to facilitate more optimal team performance while social behaviors may serve as more detrimental. The only significant interaction when the situational load was emotional in nature occurred between squad leaders' increased cognitive behaviors and their relationship with higher team performance.

Both squad and platoon leaders' presented a similar pattern of results with regards to team performance when the situational load was social in nature. Significant negative interactions occurred for cognitive and emotional leader behaviors respectively (squad leader emotional behaviors approached significance at $p < .08$). Additionally, both leaders enjoyed higher team performance ratings when their higher social behaviors matched the socially-loaded scenario. In other words, when the situation calls for unique socially-adept competencies, leaders' social behaviors become more important while both cognitive and emotional behaviors play a less prominent role. Unfortunately, only the match between social behaviors and social load reached statistical significance, partially

confirming Hypothesis 2. Despite earlier evidence suggesting that both sets of leaders may not have a comprehensive set of socially-oriented behaviors or be particularly adept in socially-loaded problem scenarios, those leaders who *were* able to increase their social behaviors during the socially loaded scenario tended to enjoy higher team performance ratings. It is worth noting that squad leader cognitive behavior–cognitive load match trended in the expected direction ($p < .06$). There are a number of potential explanations for the lack of full support for the cognitive and emotional matching conditions. It is possible that external leader- and team-performance raters (i.e., the JRTC C/Ms) had higher expectations for leader behaviors in the cognitively-loaded scenarios. As these scenarios were more aligned with expected tactics, techniques, and procedures for mission preparation and execution, leaders were generally expected to be able to handle the evolving situation and thus could have been evaluated with higher performance standards. In terms of evoking significant emotional leader behaviors, despite being highly realistic, stressful, and demanding, the scenarios in this study lacked a real-world mortality-salience aspect (Pyszczynski, Greenberg, & Solomon, 1999) that would have encouraged more relevant emotional behaviors and team processes. This point is further supported following a review of the military SME rankings of the scenarios, in which emotional-load was ranked third out of three on the cognitively-loaded and socially-loaded scenarios.

Individual Differences as Leader Substitutes

As illustrated earlier in Katz & Kahn's (1978) and Jacob & Jaques' (1987) open and stratified systems theory descriptions of varied leader attributes and behavior based

on leadership level, there exist both core and differential attributes as leaders progress to higher levels within organizations. Zaccaro (2007) described these as distal (e.g., relatively stable personality, cognitive abilities, and motives/values) and proximal (e.g., expertise/tacit knowledge, problem solving skills, and social appraisal skills) attributes. For this study, three distal antecedent traits (e.g., proneness to adaptability, grit, and hardiness) were specifically selected due to their ability to promote determination and resiliency. To test this, these dispositional predictors were expected to: 1) be significant, direct predictors of team performance; and 2) serve as potential moderators from both a subordinate leader and team composition perspective to enhance and/or substitute for hierarchically superior leader behaviors.

Unfortunately, the individual difference variables did not emerge as significant predictors of team performance. The data suggests minimal support for Hypotheses 3a. The failure to find main effects for the dispositional variables is inconsistent with current research on grit (see Duckworth et al., 2007; Duckworth & Quinn, 2009) and resilience (Bartone, 2006; Maddi, 2007) that found predictive evidence on performance measures. However, it should be noted that many of these studies were single-level in nature, such that individual dispositions were positively related to individual performance. The cross-level nature of the current study may suggest an ecological fallacy by attempting to match individual characteristics to team level outcomes (Klein, Tosi, & Cannela, 1999; Rousseau & House, 1994). Despite adopting a HLM approach which should address many of these discontinuity concerns, it is possible that there was not enough variance in the externally rated team performance scores to produce a significant outcome. With the

exception of the single, positive three-way interaction between social load x platoon leader social behavior x squad leader I-Adapt score, the significant interactions that did emerge, corresponded to the same findings for situational load in Hypothesis 2. The three-way interaction supports the complementary argument and suggests that the matching relationship found between social load and social behavior can be further enhanced if the squad leader also possesses high tendencies to be adaptive.

While the individual difference variables failed to achieve significance as main effects when operationalized as subordinate leader (i.e, squad leader) characteristics, there was partial support for Hypothesis 3b by way of the significant interactions when the individual differences consisted instead of an aggregation of subordinate characteristics, or team composition. For example, after selecting for situational load, regression analyses uncovered a series of enhancement and leader substitute relationships. As reported in the results section, under cognitively loaded scenarios team grit and team resilience provided differential results based on type of squad leader behavior. While both team grit and team resilience substituted for low squad leader cognitive behavior, they tended to enhance team performance when squad leader behavior was social and emotional in nature. Under socially loaded situations, team resilience again trended towards being a leader substitute for effective team performance when squad leader cognitive behavior was not optimal. Holistically, these results do paint an initial positive picture for team grit and team resilience, such that the squad may be able to overcome poor cognitive behavior on their leader's part under cognitively- and socially-taxing environments. Although not entirely consistent across the individual

differences under varying conditions of load, the results do suggest certain boundary conditions for when team compositional characteristics can and may substitute for certain leader behaviors.

Limitations

This study has two major, related limitations that should be noted. Partially due to the dependence on a newly created scale of leader behaviors, there were high correlations between the three leader component behaviors. The relationships between cognitive, emotional, and social leader behaviors ranged between .78 and .85 and could indicate a serious multicollinearity issue. This may bias the results by increasing standard error of estimates of the coefficients, reduce reliability, and lead to misleading interpretation (Cohen et al., 2003). Great steps were taken during the development of the behavioral competency scale by using an iterative grounded theory approach (see Amos, Weis, Zaccaro, under review) and each of the behavioral components achieved scale reliabilities greater than .89, with an overall scale reliability of .96. Additionally confirmatory factor analyses were conducted on the leader behaviors, and while slightly above traditionally accepted RMSEA thresholds, the three component behavior model resulted in the best fit (Tabachnick & Fidell, 2007). While it is possible that the three behaviors lack enough distinctiveness, they were specifically combined from the most recent leadership research. An alternative explanation may reside in training time and execution of the external raters (i.e., the C/Ms). Although one hour was dedicated to reviewing the checklist and engaging in multiple practice scoring session with the C/Ms, adding a 31-item survey for each leader per scenario to the already demanding coach/mentoring duties

created less than optimal conditions for capturing the subtle nuances within and between the three behavioral components. Future research and validation using this behavioral competency checklist is recommended with more time provided for rater assessment and potential manipulation checks.

A related limitation is the same source rater bias. As described in the procedure section, acceptable risks in rater reliability were taken due to the unique nature of this field study. Ideally, multiple raters would be used to assess a singular action in order to achieve a level of inter rater agreement (IRA) which would indicate consensus on ratings (i.e., $r_{wg(J)}$) from multiple raters on a multi-item indices (Bliese, 2000; LeBreton et al., 2003). This reliability lends confidence that the assessments between judges were accurately captured and could be interchangeable. Recall that there were 99 squads and 31 platoons, each requiring a C/M rater for each of the three STX scenarios. This coverage made multiple C/M-per-leader untenable. While not ideal due to the potential of same-source bias, this coverage method was deemed acceptable based on the benefits from gathering the rich, real-time data in this unique field environment. Additionally, it should be noted that recent methodological articles have argued that more data exists that refutes rather than supports the conception of common method bias (Chan, 2009; Lance & Vandenberg 2009).

Despite these methodological limitations, this study also has several strengths that serve to contribute to the leadership research. First, this study addresses the literature's call to conduct more realistic field research where multi-level leader behaviors play a critical role in determining successful performance, especially under demanding

conditions (Day et al., 2006; Hannah et al., 2010; Yammarino, Mumford, Connelly & Dionne, 2010). Second, this study may indeed be the first to examine how behaviors across multiple levels of leader can change based on a controllable and situationally-varying context. This research builds Johns (2006) argument that failure to consider the contextual or situational influence reduces specific explanatory power and results in broad generalizations that may not reflect the true reality in which these action teams operate. Indeed, there are numerous situational factors that could potentially moderate the manner in which an individual perceives, interprets, and reacts to critical events. By purposely examining context across distinct leader component behaviors, this research can greatly assist in identifying potential boundary conditions that exist to further our understanding of the complexities of leader behavior and performance (Leonard & Howitt, 2007; Porter & McLaughlin, 2006). Finally, this research also incorporates a trait-based antecedent approach by examining the individual and team compositional effects of three adaptive traits and their enhancing and/or substituting influence on the leader behavior-team performance relationship.

Implications

Using leader behaviors as primary predictor of team performance has far-reaching assessment, training, and development applications. Not only does it address the theoretical and doctrinal gap of proposing a more comprehensive taxonomy of leader behaviors across components (i.e., cognitive, emotional, and social), but more importantly provides a practical application for the multi-level training and development of particular leader behaviors when confronting different situational contexts. From an

individual difference perspective, identifying the existence of a pattern of behaviors and adaptive competencies that nurture a deep-rooted drive to overcome challenges in the face of stress and danger could illuminate a functional approach as to how certain individuals and team compositions are capable of enhancing and/or substituting for critical leader behaviors. From a more practitioner-oriented standpoint, once this repertoire of skills is identified and validated, this research could lay the foundation for team composition selection and for developing training protocols designed to teach effective leader strategies to those who encounter action-oriented situations on a more-than-average basis.

Conclusion

This robust field study integrates behavioral and adaptive trait perspectives of leaders and tests how they combine to predict team performance under varying situational loads. Empirical support was found for a wider range of situationally-specific leadership behaviors (i.e., cognitive, emotional, social) and dispositional traits, among two nested leadership levels within intact high performance teams. To our knowledge, this is the first study to explore team performance outcomes based on leader behaviors under varying situational loads in a real-world environment. Although field studies of this nature lack the control of traditional laboratory experiments, examining boundary conditions that exist among intact high performance teams provides a wealth of rich data to further our understanding of the actual conditions in which leaders facilitate optimal team performance. It is our hope that this study encourages more aggressive examinations of these critical relationships using existing action teams executing their roles and

responsibilities under highly realistic conditions. Future research could extend this study along a greater longitudinal timeline by examining if leaders and teams that deliberately focus on the cognitive, emotional, and social aspects across the performance episode phases not only perform better during the action phase and experience more significant positive proximal performance outcomes, and also assess if these behaviors and individual differences assist in inoculating the psychological well-being of leaders in order to mitigate the potential negative consequences (e.g., withdrawal, depression, PTSD, suicide ideation, etc.) of the often traumatic environments of typical action teams.

APPENDIX A: BEHAVIORAL COMPETENCY MEASURE CHECKLIST

Coach/Mentor Behavioral Competency Measure Checklist
For Platoon Leaders & Squad Leaders

Circle: PL SL (Dn/Co/Plt/Sqd): / / /	Scenario: DTG: Leader Behavior	O/C Rating 0=Did not attempt; 1=Poor; 3=Avg; 5=Best					
Preparation Phase During the preparation for this mission/ scenario, please indicate how the leader performed in the following areas:	Structure and plan for upcoming mission and scenario	0	1	2	3	4	5
	Define mission	0	1	2	3	4	5
	Establish expectations & goals	0	1	2	3	4	5
	Train & develop element	0	1	2	3	4	5
	Recognize emotional states	0	1	2	3	4	5
	Motivate element toward end goal	0	1	2	3	4	5
	Prepares for emotional contingencies	0	1	2	3	4	5
	Assesses social dynamics of element	0	1	2	3	4	5
	Plans for contingencies & back-up behavior	0	1	2	3	4	5
	Creates cohesion & trust	0	1	2	3	4	5
Execution Phase During the execution of this mission/scenario, please indicate how the leader performed in the following areas:	Operational environmental scanning	0	1	2	3	4	5
	Monitors team progress	0	1	2	3	4	5
	Sense-making of on-going situation	0	1	2	3	4	5
	Coordinates element activities	0	1	2	3	4	5
	Recognizes emotional impact of developing situation	0	1	2	3	4	5
	Manages emotions (self & others)	0	1	2	3	4	5
	Tailors emotional displays	0	1	2	3	4	5
	Recognizes developing 'team social' dynamics – positive or negative	0	1	2	3	4	5
	Motivates others toward goal/mission accomplishment	0	1	2	3	4	5
	Sense-giving by communicating adaptive response to element	0	1	2	3	4	5
Recovery Phase During the recovery of this mission/scenario, please indicate how the leader performed in the following areas:	Review/assess past action(s)	0	1	2	3	4	5
	Provides feedback & materiel resources	0	1	2	3	4	5
	Updates strategies for retraining	0	1	2	3	4	5
	Recognizes emotional impact of mission on element	0	1	2	3	4	5
	Understands emotional needs of individual/team	0	1	2	3	4	5
	Provides support resources for individual/team recovery	0	1	2	3	4	5
	Understands social dynamics and impact of mission	0	1	2	3	4	5
	Strategically manages interpersonal dynamics	0	1	2	3	4	5
	Supports social climate	0	1	2	3	4	5
Team Performance	**Squad or Platoon's overall performance on this scenario:**	0	1	2	3	4	5

APPENDIX B: HLM EQUATIONS

Hypothesis 1		**Hypothesis 2**	
Model 3d: Squad Leaders & Team Performance	**Model 3d: Platoon Leaders & Team Performance**	**Model 4b1: Squad Leaders & Team Performance (with situational load)**	**Model 4b1: Platoon Leaders & Team Performance (with situational load)**
Level-1 Model $TEAMPERF_{tij} = \pi_{0ij} + e_{tij}$ **Level-2 Model** $\pi_{0ij} = \beta_{00j} + \beta_{01j}*(O\_COG_{ij}) + \beta_{02j}*(O\_EMO_{ij}) + \beta_{03j}*(O\_SOC_{ij}) + r_{0ij}$ **Level-3 Model** $\beta_{00j} = \gamma_{000} + u_{00j}$ $\beta_{01j} = \gamma_{010}$ $\beta_{02j} = \gamma_{020}$ $\beta_{03j} = \gamma_{030}$ **Mixed Model** $TEAMPERF_{tij} = \gamma_{000} + \gamma_{010}*O\_COG_{ij} + \gamma_{020}*O\_EMO_{ij} + \gamma_{030}*O\_SOC_{ij} + r_{0ij} + u_{00j} + e_{tij}$	**Level-1 Model** $TEAMPERF_{ti} = \pi_{0i} + e_{ti}$ **Level-2 Model** $\pi_{0i} = \beta_{00} + \beta_{01}*(O\_COG_i) + \beta_{02}*(O\_EMO_i) + \beta_{03}*(O\_SOC_i) + r_{0i}$ **Mixed Model** $TEAMPERF_{ti} = \beta_{00} + \beta_{01}*O\_COG_i + \beta_{02}*O\_EMO_i + \beta_{03}*O\_SOC_i + r_{0i} + e_{ti}$	**Level-1 Model** $TEAMPERF = \pi_{0ij} + \pi_{1ij}*(L1_{tij}) + \pi_{2ij}*(L2_{tij}) + e_{tij}$ **Level-2 Model** $\pi_{0ij} = \beta_{00j} + \beta_{01j}*(O\_COG_{ij}) + \beta_{02j}*(O\_EMO_{ij}) + \beta_{03j}*(O\_SOC_{ij}) + r_{0ij}$ $\pi_{1ij} = \beta_{10j} + \beta_{11j}*(O\_COG_{ij}) + \beta_{12j}*(O\_EMO_{ij}) + \beta_{13j}*(O\_SOC_{ij})$ $\pi_{2ij} = \beta_{20j} + \beta_{21j}*(O\_COG_{ij}) + \beta_{22j}*(O\_EMO_{ij}) + \beta_{23j}*(O\_SOC_{ij})$ **Level-3 Model** $\beta_{00j} = \gamma_{000} + u_{00j}$ $\beta_{01j} = \gamma_{010}$ $\beta_{02j} = \gamma_{020}$ $\beta_{03j} = \gamma_{030}$ $\beta_{10j} = \gamma_{100}$ $\beta_{11j} = \gamma_{110}$ $\beta_{12j} = \gamma_{120}$ $\beta_{13j} = \gamma_{130}$ $\beta_{20j} = \gamma_{200}$ $\beta_{21j} = \gamma_{210}$ $\beta_{22j} = \gamma_{220}$ $\beta_{23j} = \gamma_{230}$ **Mixed Model** $TEAMPERF = \gamma_{000} + \gamma_{010}*O\_COG_{ij} + \gamma_{020}*O\_EMO_{ij} +$	**Level-1 Model** $TEAMPERF_{ti} = \pi_{0i} + \pi_{1i}*(L1_{ti}) + \pi_{2i}*(L2_{ti}) + e_{ti}$ **Level-2 Model** $\pi_{0i} = \beta_{00} + \beta_{01}*(O\_COG_i) + \beta_{02}*(O\_EMO_i) + \beta_{03}*(O\_SOC_i) + r_{0i}$ $\pi_{1i} = \beta_{10} + \beta_{11}*(O\_COG_i) + \beta_{12}*(O\_EMO_i) + \beta_{13}*(O\_SOC_i)$ $\pi_{2i} = \beta_{20} + \beta_{21}*(O\_COG_i) + \beta_{22}*(O\_EMO_i) + \beta_{23}*(O\_SOC_i)$ **Mixed Model** $TEAMPERF_{ti} = \beta_{00} + \beta_{01}*O\_COG_i + \beta_{02}*O\_EMO_i + \beta_{03}*O\_SOC_i + \beta_{10}*(L1_{ti}) + \beta_{11}*O\_COG_i*(L1_{ti}) + \beta_{12}*O\_EMO_i*(L1_{ti}) + \beta_{13}*O\_SOCi*(L1_{ti}) + \beta_{20}*(L2_{ti}) + \beta_{21}*O\_COG_i*(L2_{ti}) + \beta_{22}*O\_EMO_i*(L2_{ti}) + \beta_{23}*O\_SOC_i*(L2_{ti}) + r_{0i} + e_{ti}$

		γ_{030}*O_SOC$_{ij}$ + γ_{100}*$L1_{tij}$ + γ_{110}*$L1_{tij}$*O_COG$_{ij}$ + γ_{120}*$L1_{tij}$*O_EMO$_{ij}$ + γ_{130}*$L1_{tij}$*O_SOC$_{ij}$ + γ_{200}*$L2_{tij}$ + γ_{210}*$L2_{tij}$*O_COG$_{ij}$ + γ_{220}*$L2_{tij}$*O_EMO$_{ij}$ + γ_{230}*$L2_{tij}$*O_SOC$_{ij}$ + r_{0ij} + u_{00j} + e_{tij}	

APPENDIX C: DISSERTATION PROPOSAL LITERATURE REVIEW

The concept of the adaptable leader, especially one capable of recognizing and adapting to complex changes to maximize existing (or create new) advantages and minimize threats, provides a unique competence that organizations are seeking to stay competitive in today's uncertain and often turbulent work environment (Burke, Pierce, & Salas, 2006; Ilgen & Pulakos, 1999; Kozlowski, Watola, Jensen, Kim, & Botero, 2009; Smith, Ford, & Kozlowski, 1997). The recent surge of interest in exploring adaptive leaders and leadership dynamics has resulted in numerous advances such as providing an empirically validated framework for adaptive dimensions (Pulakos, Arad, Donovan, & Plamondon, 2000; White et al., 2005), integrated theories and protocols for developing leaders (Mueller-Hanson, White, Dorsey, & Pulakos, 2005; Smith et al., 1997; Tucker & Gunther, 2009), and translating this singular leader focus into the processes and dynamics required to develop adaptive teams (Kozlowski & Bell, 2008; Kozlowski, Gully, Nason, & Smith, 1999).

Despite this growth of this literature, one largely untapped area is how an extreme organizational context may impact the evolving nature of adaptive leadership (Avolio, 2007; Boal & Hooijberg, 2000). These unique environments possess characteristics that impact both leader and team adaptive behavior and are not common in normal non-dangerous contexts (Hannah, Uhl-Bien, Avolio, & Cavarretta, 2009; Uhl-Bien, Marion, & McKelvery, 2007). Despite the acknowledgment that this particular environment can serve as a crucible experience for leaders, little empirical research has explored if effective leadership behaviors in extreme contexts are qualitatively different (Hannah, Campbell, & Matthews, 2010; Hannah et al., 2009).

To address this gap, the proposed research takes a multilevel approach to examine individual and team adaptive readiness in extreme contexts through a functional leadership and behavioral performance lens. This multilevel perspective provides a more comprehensive account of the complex interchange between leaders and their respective teams and has the potential for uncovering additional variance in individual and team performance that is typically omitted by single-level studies. It is argued that the patterns of leader behaviors across a performance episode required for effective adaptive performance under intense conditions are different than those needed when the environmental conditions match expectations. This difference stems from the complexity of balancing the varying load conditions (e.g., cognitive, emotional, and social) inherent in these unique situations in order to achieve optimal performance outcomes and ensure that subordinates and teams experience adaptive readiness.

Therefore, the goal of this research is to illustrate that successful planning, execution, and recovery for these high consequence contingency situations requires specific combinations of leader behaviors in order to facilitate adaptive readiness in individual and team-level outcomes. I argue that only by examining dangerous events through a lens of cognitive, emotional, and social load, can one differentiate critical

leader and team behaviors that facilitate effective performance and fully uncover the nature of resilience. I believe that leaders and teams that deliberately focus on the cognitive, emotional, and social aspects across the performance episode phases will not only perform better during the action phase and experience more significant positive proximal outcomes, and will also greatly assist in theoretically mitigating the potential negative consequences (e.g., withdrawal, depression, PTSD, suicide ideation, etc.) of the traumatic experience operationalized as psychological well-being as an ultimate outcome. To this end the proposal unfolds as follows. First, definitions and background literature of extreme contexts as well as adaptive readiness and performance are presented to guide the subsequent discussion. This is followed by a summary of two leading models that explore the leadership and adaptive performance relationship and highlight the need for a more comprehensive exploration of contextual influences, specifically the inherent "load" within these extreme situations. Then, an overview of the proposed conceptual framework is provided (Figure 1) with relevant empirical and conceptual support for its propositions. Included in this review is a discussion of how situational load (e.g., cognitive, emotional, and social) moderates the relationship between leader behaviors and task- (e.g., performance, readiness for next performance episode) and relational-oriented (e.g., cohesion, self/collective efficacy, motivation, trust, attachment, and morale) outcomes at both the individual and team levels, as well one potential individual-level competency that directly predicts individual- and indirectly predict team-level performance outcomes. Finally, a method section that outlines pre-coordination with a military sample, proposed procedure, and planned analyses is provided, concluding with potential implications for the proposed research.

The proposed research contributes to the extant literature in three distinct ways. First, it places an emphasis on context and attempts to address the question of whether or not leader behaviors are qualitatively different when applied in an extreme or dangerous situation. Despite the acknowledgement within the literature that context matters (Bryman, Stephens, & Campo, 1996; Johns, 2006), very little research has examined how important leader actions and behaviors are when confronting routine versus non-routine environments (Hannah et al., 2010; Porter & McLaughlin, 2006; Marion & Uhl-Bien, 2001). Second, it expands existing work on readiness by describing and applying its adaptive, multifaceted (e.g., cognitive, social, and emotional) role in the selection of and execution of leader behaviors temporally across a performance episode. Finally, it provides a longitudinal examination of leader behaviors across highly stressful scenarios to determine their singular and combined effects on individual and team adaptive readiness outcomes. Not only does this afford a more realistic review of leader behaviors during preparation, execution, and recovery for an event requiring adaptive behavior, but also sheds light on the temporal growth in performance on intact and highly interdependent action teams.

In Extremis Contexts

This proposal builds off of Johns (2006) argument that failure to consider the contextual influence reduces specific explanatory power and results in broad generalizations that may not reflect true reality. Indeed, there are numerous situational

factors that could potentially moderate the manner in which an individual perceives, interprets, and reacts to critical events. Purposely examining context within discrete phases of a performance episode can greatly assist in identifying potential boundary conditions that exist to furthering our understanding of the complexities of leader behavior and performance (Leonard & Howitt, 2007; Porter & McLaughlin, 2006). This is especially critical when preparation and recovery are linked to actions that occur within an extreme environment in which discrete events maximize or overwhelm an individual's existing resource (e.g., physical, psychological, material) capacity (Hannah et al., 2009; Yammarino, Mumford, Connelly & Dionne (2010).

In order to increase the probability of effective team performance under extreme conditions, a vast majority of action team-oriented organizations (e.g., military, S.W.A.T., firefighters, etc.) employ intensive training regimes for their leaders and teams (Frost & Knapp, 2005; Sundstrom, 1999; Sundstrom, McIntyre, Halfhill, & Richards, 2000). For selected high-potential leaders and teams, this training is given a high priority status (e.g., ready access to resources, equipment, training aids, etc.). This focused training is designed to expose leaders and teams to realistic, simulated environments that closely mirror the oftentimes chaotic conditions of their respective environments. Actions, reactions, and contingency drills are rehearsed under varying environmental conditions and levels of difficulty in order to attenuate the shock effect of dynamic change and the myriad of decisions and actions required by leaders during that chaotic process (Allen & Kayes, forthcoming; Hannah et al., 2009; Wong, 2006). Despite this intense emphasis on contingency training, a common point of failure in these teams occurs when leaders and units are exposed to and unprepared for a wholly dynamic change in their operating environment (Griffin, Neal, and Parker, 2007; Pulakos et al, 2000). This is especially apparent when there exist mortal consequences for the decisions and actions taken by leaders and team in real-world situations. Unfortunately, when examining leader and team behaviors in extreme situations, there has been relatively little empirical work in these contexts (Hannah et al., 2010; Hannah et al., 2009; Uhl-Bien et al., 2007). Hannah and colleagues (2009) lamented "If leadership is indeed different when leaders and/or their followers are placed in danger, then quite frankly, we know very little about how such leadership operates and what constitutes effective leadership for such dangerous contexts. We say *know* because very little rigorous empirical research has been done in such contexts" (italics included in original; p. S158). This is mainly due to the availability of opportunities to study real-world teams in extreme environments or ethical considerations and constraints due to the inherent dangerous nature of events associated with situational ambiguity and minimal controllability (Bishop, 2004; see Salas, Wilson, Burke, & Wightman, 2006 for crew resource management review). Despite this dearth of research, many of the leadership behaviors and processes examined in adaptive settings may prove similar within extreme contexts, especially when considering the crucial role a leader plays in the multilevel (e.g., vertical and horizontal) nature of highly interdependent teams to ensure coordinated and synchronized action (see Marion & Uhl-Bien, 2001).

The term *in extremis* is an adverb connoting "at the point of death" or "in grave or extreme circumstances" (Merrim-Webster, 2011). When describing an in extremis event, the context must meet two fundamental criteria: the risk of death or serious injury is higher than average; and that team members or participants experience high mortality salience (i.e., acknowledgement regarding the seriousness and danger of the situation and that failure to act or respond can result in injury or death) (Kolditz, 2005). Hannah and colleagues classify extreme events as being embedded within extreme contexts (Hannah et al., 2009). They define an extreme context as "an environment where one or more extreme events are occurring or are likely to occur that may exceed the organization's capacity to prevent and result in an extensive and intolerable magnitude of physical, psychological, or material consequences to-or in close physical or psycho-social proximity to-organizational members" (2009, p.898). In essence, the environment has dynamically changed with high probability for negative (and possibly mortal) consequences unless systematic actions are taken by the leader and team. This environment is conducive to adaptive behavior, especially since its outcome is dependent upon a leader's functional ability to apply "an effective change in response to an altered situation" (White et al., 2005, p. 2).

At its most basic functional level, a leader engages in requisite behaviors to address team needs in order to facilitate goal or task accomplishment (McGrath, 1962; Hackman & Walton, 1986). This functional perspective serves two important roles in defining a leader's role in the social problem-solving process. First, it illustrates the mandate for a leader – an individual that serves to provide direction for a collective purpose and overall operation management to accomplish a task (Zaccaro, 2001, 2007). Second, it acknowledges that leadership does not occur in a vacuum and incorporates the vital interplay between the leader and the led.

Adaptive Readiness and Performance

In today's highly competitive and pressure-filled corporate environment, a premium is placed on organizations that can either attract or nurture leaders who possess the capability for excelling in an unpredictable and often chaotic environment. Adaptability antecedents within the changing nature of work and/or leadership can be grouped into two primary categories; requirements initiated by either the environment or the individual. Drawing from the previous section, this proposal adopts the former perspective, specifically how an extreme context can influence the effectiveness of leadership behaviors designed to promote adaptive readiness.

Adaptive readiness reflects an individual's readiness for complex, non-routine problem situations that require an individual to functionally engage in adaptive behavior along core cognitive, social, and emotional capacities (see Zaccaro, Weis & Chen, forthcoming). In essence, it represents a multifaceted degree of readiness and potential that an individual can bring to bear on a problem to facilitate performance (Morrison & Fletcher, 2002). This readiness is a result of functional action or realignment of behaviors and processes in either an anticipatory or reactive manner following significant environmental or relational changes (see Banks, Bader, Fleming, Zaccaro, & Barber,

2001). In other words, it reflects a state in which the individual is ready to address the challenges inherent in a situation requiring adaptive performance.

The adaptive performance literature is replete with numerous definitional versions (see Ployhart and Bliese, 2006; Pulakos et al., 2000; Zaccaro, 2001), but White et al. (2005) summarized the construct of "adaptability" most clearly and succinctly as "an effective change in response to an altered situation" (p. 2). White and colleagues also provided three parameters to their definition: 1) one must first initiate some form of change; 2) that change must also be effective in promoting progress or performance; and 3) the change must be due in part to a reaction or expectation of new environmental conditions (2005). As its name implies, adaptability reflects the capacity to respond effectively to the new dynamic situation. The three parameters in the definition reflect the synergy of both cognitive and behavioral components of adaptive readiness. The change in the normal environmental condition serves as a key driver for adaptive action. The adaptive leader must possess both the cognitive and behavioral capacity to recognize subtle cues that signify impending change; engage in problem solving processes to develop, assess, and select a strategy designed to address the change; and subsequently execute, reassess, and continuously learn from implementation represent the actions expected of an adaptable leader.

In order to better understand how to identify, develop, and enhance this adaptive capacity, Pulakos and colleagues empirically validated an eight dimension taxonomy of adaptive performance (2000, 2002). Using a sample size of 1,619 subordinates and supervisors, they factor analyzed more than 1000 critical incidents across a variety of job domains, each requiring adaptive performance. Although originally proposing a classification consisting of six key behaviors, they found empirical support for a taxonomy consisting of eight dimensions: consisting of: 1) handling emergencies or crisis situations (e.g., "reacting with appropriate and proper urgency in life threatening, dangerous, or emergency situations" p.617); 2) handling work stress (e.g., "remaining composed and cool under pressure, not overreacting, managing frustration well, and acting as a calming and settling influence on others" p.615); 3) solving problems creatively (e.g., "bring complex matters or situations to their desired end state or develop creative solutions to novel, difficult problems" p.613); 4) dealing with uncertain and unpredictable work situations (e.g., "how efficiently and smoothly they can shift their orientation or focus when necessary" p.613); 5) learning work tasks, technologies, and procedures (e.g., "anticipating future needs and adapt to changing job requirements by learning new tasks, technologies, procedures, and roles" p.614); 6) demonstrating interpersonal adaptability (e.g., "adjusting interpersonal style to achieve a goal…adapting interpersonal behavior to work effectively with a new team" p.614); 7) demonstrating cultural adaptability (e.g., "fully understanding and willingly behaving in accordance with the accepted customs, values, rules, and structures" p.614); and 8) demonstrating physically oriented adaptability (e.g., "adapting to various physical factors such as heat, noise, uncomfortable climates, and difficult environments" p.614). These eight dimensions, plus a potential ninth dimension particular to leaders, *leads an adaptable team* (White et al., 2005), have received good empirical support (Ployhart & Bliese,

2006; Pulakos et al., 2000; 2002; White et al., 2005) and has proven useful in describing and operationalizing the adaptable behavior that is required to maximize opportunities when confronted with possible and potential change.

While these dimensions represent a tremendous move forward in capturing a more objective conceptualization of what the job performance components of adaptability in a work context look like, the complex and multifaceted nature of adaptability has prompted researchers to speculate that providing a blueprint that outlines common predictors of adaptive performance may prove difficult (Ployhart & Bliese, 2006). Despite this challenge, numerous models have propagated the literature with varying success at outlining individual- and team-level predictors of adaptive performance. While a complete review of these characteristics is beyond the scope of this proposal, two recent models highlight the trend of distal trait-like characteristics and more proximal behavioral processes impacting adaptive performance (for a comprehensive list of leadership traits and behaviors, see DeRue, Nahrgang, Wellman, & Humphrey, 2011).

In building an integrated learner-centered training design, Bell and Kozlowski outlined how individual differences (e.g., cognitive abilities/skills, directions/motives) serve as antecedents to an active learning system in which training components, training strategy, and *self-regulatory systems* (e.g., practice: behavioral; self-monitoring: cognitive; and self-evaluation: affect) combine to promote proximal learning and more distal adaptation outcomes (2010). Gully and Chen adopted a similar perspective in which *intervening mechanisms* (e.g., information-processing capacity, attention focus and metacognitive processing, motivation and effort allocation, emotional regulation and control) serve to mediate the relationship between traditional individual characteristics (e.g., demographics, capabilities, personality traits, and interests/values) and performance outcomes (2010). Their model also incorporates the moderating role of situational characteristics on this relationship.

These models highlight two important aspects for the current research. They acknowledge both the distal aspect of trait-like competencies and the proximal nature of behaviors when examined along the progression of antecedents of adaptive performance. In this sense, the behaviors serve as an intervening or mediating process, similar to the popular input-mediator-outcome-input (IMOI) model of team effectiveness (Ilgen, Hollenbeck, Johnson & Jundt, 2005). However, DeRue and colleagues found meta-analytic evidence that leader behaviors predicted leadership effectiveness beyond that of leader traits, leading them to conclude that "although having certain traits may predispose individuals to certain behaviors, behaviors are the more important predictor of leadership effectiveness" (2011, p. 40). Indeed, when viewed from this perspective and coupled with the general acknowledgement that traits are more stable in nature while behaviors tend to be more trainable (Mueller-Hanson et al., 2005), it could be argued that organizations attempting to facilitate the development of adaptive performance would be well advised to select for key adaptive traits and train for key adaptive behaviors. Second, these models and existing adaptive research continue to focus primarily on the cognitive potential leaders and teams bring to these situations, specifically the cognitive skills and attributes necessary for predicting effective performance in unstable and unpredictable

environments (DeChurch & Mesmer-Magnus, 2010; Griffin et al., 2007; Morrison & Fletcher, 2002; Pulakos et al., 2000). The cognitive capacity for dealing the stressors associated with extreme situations notwithstanding, a blind adherence to a solely cognitive-focused conceptualization of leader behaviors misses some of the unique challenges that adaptable situations present.

When combining the potential for new adaptive performance requirements within an extreme environment, it is plausible that patterns of functional leader behaviors required for effective adaptive performance under acute danger are different than those needed when the environmental conditions match previously held expectations. As noted in the introduction, extant research has not considered how these leader behaviors are different in dangerous environments. The notable, obvious difference lays in the increased complexity, chaos, and mortality salience of the extreme context. The less obvious difference resides in the careful balance leaders must maintain regarding the varying load requirements that these situations engender. However, existing psychological research on readiness has focused primarily on the cognitive potential leaders and teams bring to these situations, specifically the cognitive skills and attributes necessary for predicting effective performance in unstable and unpredictable environments (Bierman, Torres, Dmoitrovich, Welsh, & Gest, 2009; DeChurch & Mesmer-Magnus, 2010; Griffin et al, 2007; O'Neil et al., forthcoming; Morrison & Fletcher, 2002; see Marcy & Mumford, 2010, for a notable exception). This traditional, cognitive-focused conceptualization misses some of the unique challenges that adaptable situations (particularly within an in extremis context) present. One glaring omission is that previous work was not focused on readiness for environments that experienced dynamic and sometimes unpredictable change. Secondly, it does not allow for a rigorous examination of the separate and combined influences of leader behaviors aligned with cognitive, social, and emotional aspects may differentially impact team processes and performance. These two overlooked aspects – the social and emotional load of the extreme situation -- if not properly addressed, can be severely detrimental to immediate and long-term performance, psychological health, and well-being (Zaccaro, Weis, & Chen, forthcoming). This argument is further developed in a subsequent section describing the proposed model.

Linking Adaptive Performance Dimensions to Adaptive Readiness Components.

Table 1 describes the cross-level association between the current nine adaptability dimensions (Pulakos et al., 2000; White et al., 2005) and the three proposed components of situational load (e.g., cognitive, social, and emotional). These associations were the product of previous theoretical work (Zaccaro, Weis, & Matthews, 2010) and confirmed by a convenience sample of action team subject matter experts (SMEs) taken by the author through discussion of the conceptual dimensions and definitional breakdowns of both the nine adaptability dimensions (Pulakos et al., 2000; White et al., 2005) and situational load components (Zaccaro, Weis, & Chen, forthcoming).

A Model of Multilevel Adaptive Readiness in Extreme Contexts

As highlighted above, great steps have been made to conceptualize and operationalize the construct of adaptive performance. However, gaps in the current

literature concerning the expanded role of context and how it impacts leader behaviors, as well as an overwhelming emphasis on the cognitive aspects of adaptive performance still exist. The proposed model attempts to address this concern by taking a multilevel approach to specifically examine how context, operationalized by situational load in extreme contexts (e.g., cognitive, emotional, and social), influences the relationship between leader behaviors and adaptive readiness outcomes on both task- and relational-oriented outcomes at both the individual and team levels. This perspective provides a more comprehensive account of the complex interchange between leader behaviors and their respective multilevel performance outcomes and has the potential for uncovering additional variance in individual and team performance. The model also incorporates three critical individual pre-dispositional competencies (e.g., grit, hardiness, and adaptive proneness) to examine the importance of resilience in dangerous environments.

Multilevel Nature of the Model. Despite the proliferation of leadership studies in the literature, a common critique being leveled at the field is the lack of integration (Avolio, 2007; DeRue et al., 2011). Herein lays the catch-22 of psychological research. Broad, overarching theories designed to generalize across populations and contexts are criticized for not delving deep enough into the weeds to discover the true inner workings of their selected inputs, processes, and outcomes. From the opposite perspective, placing discrete boundaries to address the granularity of theory development and testing, are called into question because they are too specific and not generalizable to a wider population. The purpose of this section is not to make a definitive stand on either extreme, but rather to highlight that future research should look to achieve a happy medium. To address an additional aspect of the integration issue, the current research proposes a multilevel approach.

Leadership does not occur in a vacuum (Katz & Kahn, 1987). The leader-subordinate and leader-team relationships enjoy a reciprocal influencing process (Chen, Thomas, & Wallace, 2005; Day, Gronn, & Salas, 2004; Henderson, 2009). Ignoring this connection with cross-sectional studies leaves questions about the mutual influence processes unanswered. Indeed, in real world settings, actual performance is being executed simultaneously across individual, team and organizational level, arguably with interconnected relationships (Wildman, Bedwell, Salas, & Smith-Jentsch, 2010). The influence of leader behavior in extreme contexts and the resultant states and outcomes across level are highly related, especially when attempting to deal or cope with uncertain and unpredictable problem sets (e.g., Ashford, 1986; Edwards & Morrison, 1994; Goodman, 1994; Hall & Mirvis, 1995; Mumford, Friedrich, Caughron, & Byrne, 2007). Thus, by adopting a multilevel approach, the current research can: 1) examine the simultaneous and reciprocal relationship between leader/team and individual in its natural setting; and 2) explore how leader behaviors (even among varied levels of leadership) have differential effects on individual and team-level performance.

Leader Behavior Competencies in Extreme Contexts. Earlier in the introduction, an argument was made to focus primarily on proximal behaviors as key antecedents on adaptive performance as opposed to more distal individual difference traits. This was based on meta-analytic evidence suggesting the greater predictive power of leader

behaviors (DeRue et al., 2011) and that behaviors are more amenable to training (Mueller-Hanson et al., 2005), an issue highly relevant to high- responsibility organizations (e.g., SWAT, fire fighters, emergency room, military, etc.) that require maximum levels of adaptive capacity in their leaders.

Traditional leadership adaptability research advocates that leaders typically emphasize behaviors consistent with one type of leadership style (Cotty, Sanders, & Thompson, 2003; Mueller-Hanson et al., 2005). Scenarios requiring an adaptive change predominantly prompted more cognitive or socially related leader behaviors (LePine, 2003; LePine, Colquitt, & Erez, 2000; Tucker & Gunther, 2009). This is understandable based on the perceived and actual cognitive complexity inherent in extreme environments. There exists a strong emphasis on associated cognitive and socially oriented behaviors and competencies in order to deal with unique and changing high risk situations (Drillings & Serfaty, 1997; Hooijberg, 1996; Mumford et al., 2007; Mumford, Zaccaro, Harding, Jacobs, & Fleishman, 2000). However, in order to truly facilitate adaptive readiness in subordinate elements, leaders must move beyond these traditional cognitively-oriented behavior categories, and expand their repertoire to include the combinations of all three components (e.g., cognitive, social, and emotional).

Zaccaro and colleagues (forthcoming) argued that adaptive situations impose a variety of cognitive, emotional, and social demands, each uniquely requiring specific competencies. For example, a typical military convoy mission may require minimal cognitive resources due to well-established protocols, reaction drills, familiarity with a secure route, and execution in a low threat environment. However, if that element is instead conducting a convoy operation through an unstable and enemy-controlled territory in which the unit had experienced multiple casualties the day before, the emotional resources demands on the unit leader and members are quite different. Similarly, a new leader who is required to establish relationships with tribal leaders in a foreign country or with unfamiliar non-governmental organizations (NGOs), may need to utilize significant social resources in order to facilitate a successful engagement. These simple examples call for emotional and social resources, respectively, more than (or in addition to) the expected cognitive resources. Additionally, leaders do not just apply all of these behaviors at once, but rather choose specific behaviors that are tailored to be functional at a particular phase of a performance episode and match the situational load of the anticipated or actual environment.

Only when associated behaviors and competencies are aligned in a cognitive, emotional, and social sense can one definitively examine the incremental influence across category when attempting to predict overall readiness and performance.

The remainder of this section reviews the proposed leader behaviors that facilitate adaptive performance (Table 2). This is accomplished by addressing the leader behaviors in two distinct yet associated parts. The first delineation uses a temporal aspect to reflect that leader behaviors change as they progress through a performance episode (Marks, Mathieu, & Zaccaro, 2001). The second reflects the conceptual separation of cognitive-, emotional-, and social-oriented behaviors to represent how leaders can prepare and maintain action processes throughout the performance episode.

Leader behaviors are different in dangerous environments. The notable, obvious difference lays in the increased complexity, chaos, and mortality salience of the extreme context. The increased emphasis on the high consequences for less than optimal performance almost ensure leaders are engaging in maximal- as opposed to typical performance (see Mangos & Arnold, 2008). The less obvious difference resides in the careful balance leaders must maintain regarding the behaviors used to address cognitive, emotional, and social preparation prior to, during, and following an extreme event. The current research borrows from the Marks et al. (2001) taxonomy of team process to highlight the temporal nature of the model. The authors argued that team processes take place in a multiphase episodic framework. These in turn facilitate behaviors related to the team's goal accomplishments. Since the leader is a focal member embedded within the team, he or she plays a pivotal role in providing the necessary direction, purpose, and motivation for the team. Based on this critical role, this proposal extends the Marks et al. (2001) team-based framework to the actions and behaviors of the individual leader (also see Burke et al., 2006; Gully, Incalcaterra, Aparna, & Beauien, 2002; Zaheer, Albert, & Zaheer, 1999).

The Marks et al. (2001) episodic framework consists of two distinct phases; a transition and action phase, both of which foster different types of taskwork. Within the transition phase, the leader and team members orient the majority of their activity towards assessment, evaluation, planning, and preparation/training for an assigned or potential team goal or objective. Transition phases occur both prior to and following an action phase. During the action phase, the leader and team members participate in actions and activities that are directly related to goal or mission accomplishment. Mark et al. (2001) also described the phases and entire performance episode as situationally dependent in which the time periods vary in terms of both onset and cycle times. Additionally, the recursive nature reflects the continuation of subsequent phases (e.g., recurring transition – action – transition – action etc.).

The current proposal extends the Marks et al. (2001) two-phase framework into three more focused stages with preparation and recovery reflecting the former (e.g., transition) and execution (e.g., action) the later. This expansion was done to offer increased fidelity of how leaders approach the varied roles they fulfill in an adaptive episode (see also Kozlowski et al., 2009). This also assists in providing a modified leader behavior paradigm framework (DeRue et al., 2011) to categorize proposed behaviors.

Table 2 provides a depiction of the proposed leadership behaviors across performance episode and behavior category. The taxonomy of behaviors was created from a comprehensive analysis of existing literature and empirical sources (see final column in Table 1). Based upon a combination of existing literature (see Burke et al., 2006; Gick & Holyoak, 1987; Morgeson, DeRue, & Karam, 2010; Pulakos, Mueller-Hanson, & Nelson, forthcoming; Smith et al., 1997; White et al., 2005; Zaccaro, Kemp, & Bader, 2004) and parallel research designed to extract key leader adaptive behaviors from critical incidents (Amos, Weis, Grim, & Zaccaro, in-progress), three-to-four leader behaviors were selected that aligned with both the temporal phase (e.g., *preparation*, *execution*, *recovery*) of the performance episode and the three critical behavior

components: (e.g., *cognitive*: focus on understanding situation and planning response; *emotional*: focus on maintaining motivational focus and deploying effective coping responses; and *social*: focus on working collaboratively, maintaining relationships, and frame of reference changing to interpret and manage changing social cues).

Using the temporal approach, there are *cognitive behaviors* associated with each phase: *preparation* (structure and plan for upcoming mission and scenario; define mission; establish expectations and goals; train and develop element); *execution* (operational environmental scanning; monitors team progress and situation; provides sense-making of on-going situation; coordinates element activities); and *recovery* (review/assess actions; provides feedback and materiel resources; updates strategies for retraining). Those behaviors associated with *emotional-oriented behaviors* include: *preparation* (recognize emotional states; motivate element towards end goal; prepares for emotional contingencies); *execution* (recognizes emotional impact of developing situation; manages emotions – self and others; tailors own emotional displays); and *recovery* (recognizes emotional impact of mission on element; understands emotional needs of individual/team; provides support resources for individual/team recovery). Finally, for *social-oriented behaviors*: *preparation* (assesses social dynamics of element; plans for contingencies and back-up behavior; creates cohesion and trust); *execution* (recognizes developing team social dynamics – positive or negative; motivates others toward goal/mission accomplishment; sense-giving by communicating adaptive response to element); and *recovery* (understands social dynamics and impact of mission; strategically manages interpersonal dynamics; supports social climate).

The cognitive leader behaviors in the model all possess a task-oriented perspective. Similar to task-oriented taxonomies developed over time (Fleishman et al., 1991; DeRue et al., 2011), these behaviors have a functional approach as to how a leader assists and directs others to solve problems. As such, these behaviors are designed to identify a need required to promote movement toward an established goal (i.e., preparation), enact a strategy to direct, monitor, and synchronize progress towards goal accomplishment (i.e., execution), and then review past action to ensure successes are maintained and errors are corrected (i.e., recovery).

The emotional and social leader behaviors tend to fall within a more encompassing category of relational-oriented behaviors. In this sense, the leader fulfills a role as team builder to closely monitor needs associated with interpersonal dynamics and behave in ways that foster team well-being and respect. However, it is important to recognize the subtle nuances within this superordinate category. In the extreme context, the emotional behaviors serve as a behavioral equivalent to emotional intelligence (e.g., an ability to identify, assess, and shape the emotions of self and others; Salovey & Meyer, 1990). Although often overlooked in traditional action-team environments, these continued behaviors are critical for psychological well-being and performance in dangerous situations due to the extreme stress and mortality salience they engender. Leaders must focus on ensuring teams are emotionally prepared for the extreme environment by providing motivation and discussing the potential rigors/stressors (i.e., preparation), monitor and manage emotional impacts during the action (i.e., execution),

and evaluate needs for internal/external resources upon completion (i.e., recovery). The social behaviors follow a similar pattern but are designed to build the trust, confidence, and cohesion needed when lives depend on both individual and team performance. Leaders first work to build these components using hard, realistic and shared training experiences (i.e., preparation), promote positive communication and sense-giving during the event (i.e., execution), and reinforce the social climate at the events conclusion (i.e., recovery).

Despite differences in task-, relations-, and change-oriented behavior, the functional leadership research converges in examining how leaders set direction, manage the operation of others, and attempt to align the interests of the collective organization and direct performance to accomplish tasks (Avolio, Walumba, & Weber, 2009; Barling, Christie, & Hoption, 2010; Fleishman et al., 1991; Morgeson et al., 2010). In the introduction, an argument was made regarding a differential pattern of behaviors may be required for leaders to "adjust, adapt, and flex their response to unpredictable and potentially catastrophic changes" in order to survive and succeed in these unique environments (Norton, 2010, p. 143). While a prediction of leader behaviors being positively related to individual and team behavior does not stray far from the well established association in mainstream literature, it does establish a foundation for examining certain behaviors within a highly stressful and unpredictable environment (e.g., Day, 2000; DeRue & Wellman, 2009; Dragoni, Tesluk, Russel, & Oh, 2009). Therefore, the first hypothesis serves as a condition setter and assists in solidifying the rationale for the proposed research. As depicted in Figure 1, these leader behaviors are predicted to have both direct and indirect effects on both task- and relational-oriented outcomes (to be described below) at the individual and team levels, thus the first hypothesis:

> *Hypothesis 1. Leaders who engage in a combination of cognitive-, emotional-, and social-based leadership behaviors will exhibit a stronger, positive relationship with proximal task- and relational-oriented performance outcomes at both the individual- and team-levels.*

Level of Leader Impact on Outcomes (Exploratory Hypothesis 1). Additionally, the current research intends to explore the impact on the level of the leader within the organization. It is not unusual for multiple levels of nested leaders to play a role in adaptive performance. However, it is plausible that the literal and figurative distance a leader is removed from the direct action of *leading* may have a differential impact on individual and team level adaptive performance. I suspect that this is especially relevant in extreme environments when direct or tactical closeness to the action being carried out facilitates ancillary effects such as: better situational awareness; minimum time in the exchange of new orders or direction; and a sense of shared danger/consequence, which in turn promotes further trust and confidence if actions are successful. Based on being in a more direct, hands-on, and tactical role, an argument could be made that the direct-level leader is required to exhibit more relationally-oriented behaviors (e.g., emotion and social) to lead, motivate, and influence behavior of subordinates (i.e., individual squad members). In contrast, the operational leader, while not that far removed from the tactical

action, is expected to play a more significant role as plan developer and strategic thinker, compared to the direct ground executer. In this sense, an argument could be made that the operational leader may necessarily rely more on the cognitive behaviors while providing direction to his/her subordinates. Due to the plausible, yet theoretical nature of this issue, combined with the scarcity of research examining removed levels of leadership across differing cognitive-, emotional-, and social-behaviors, the proposed research attempts to approach this question in an exploratory fashion as exhibited by the exploratory hypothesis 1 (EH1) regarding level of leader in Figure 1.

Situational Load. As alluded to in the introduction, the current research argues that past conceptualizations of adaptive readiness have placed an overwhelming precedence on attributes associated with cognitive preparedness. More recent work by Mueller-Hanson et al. (2005) started to illuminate this oversight by further categorizing the Pulakos et al. (2000) dimensions into superordinate categories consisting of mental, interpersonal, and physical. However, it is possible that performance situations, especially those that occur in extreme environments, may not fit so nicely within a singular category. Rather, the event can require combinations of resources from cognitive, emotional, and social behaviors (Zaccaro, Weis, & Chen, forthcoming). Zaccaro and colleagues suggest that these challenges and demands can be grouped into categories pertaining to how much cognitive, social, and emotional resources (or load) they require for effective adaptation (Zaccaro et al., forthcoming). Forced to adapt to an emergency or crisis situation or dealing with uncertain and unpredictable work situations may engender both high cognitive and emotional load. Time pressure, chaotic environments, and threat can individually and/or collectively affect one's interpretation of the situation and test the resources available for dealing with and adapting to these new factors. Instead of being overwhelmed with the more familiar construal of cognitive load, the individual must also deal with an accumulation of psycho-emotional stress induced by chaotic and unpredictable environments or situations that are physically or emotionally laborious. Attempting to interpret these incoming signals and regulate one's personal responses can lead to intellectual, physical, or emotional exhaustion and requires surplus energy consumption.

Moreover, situations may vary in terms of the cognitive, emotional, and social demands they present, with many requiring a greater degree of emotional and social readiness rather than traditional cognitive readiness. In an effort to expand upon this notion, a new conceptualization of emotional load moves beyond the conventional description of environmental or job demands that strain available resources and defines the construct as "presence of high levels of emotion-inducing stimuli in the operating environment that require the deployment of mental, social, and emotional coping resources to maintain operational effectiveness" (Zaccaro et al., forthcoming, p. X). Notwithstanding the stress and anxiety associated with leading in dangerous environments, existing literature recommends the development of coping strategies and leader empathy rather than providing guidance on targeted behavioral actions that may have an inoculating effect on the powerful consequences of psychological trauma (Kammeyer-Mueller, Judge, & Scott, 2009; Kellett, Humphrey, & Sleeth, 2002).

Additionally, no direction is provided to illuminate the importance of these supplemental components in any portion of a performance episode (e.g., preparation, execution, and recovery). The consequence of this act of omission lays in the reactive nature many action-oriented organizations (e.g., SWAT, military, firefighters) use to address potential negative outcomes of a traumatic emotional experience. The combined stress of extreme environments also tests the fabric of social relationships. Making interpersonal decisions with life or death consequences adds an element of complexity that may exceed existing social resources (Zaccaro, 2001) and requires additional behaviors and roles for the leader to enact (Hooijberg, 1996). Based on these conceptualizations and their moderating impact on leader behaviors, the following propositions are made:

Hypothesis 2. Situational load will moderate the relationship between leader behaviors and team outcomes such that:

a. *In scenarios that are predominantly cognitive in nature, leaders who engage in cognitive readiness behaviors/processes predict adaptive task – and relational-oriented performance at the individual and team level over and above social and emotional readiness behaviors/processes.*
b. *In scenarios that are predominantly social in nature, leaders who engage in social readiness behaviors/processes predict adaptive task – and relational-oriented performance at the individual and team level over and above cognitive and emotional readiness behaviors/processes.*
c. *In scenarios that are predominantly emotional in nature, leaders who engage in emotional readiness behaviors/processes predict adaptive task – and relational-oriented performance at the individual and team level over and above cognitive and social readiness behaviors/processes.*

Individual Pre-disposition Competencies – I-ADAPT, Grit, & Hardiness. Despite this paper's focus on the more proximal leader behaviors of adaptive performance, there exist some distal antecedent traits (e.g., proneness to adaptability, grit, and hardiness) that are receiving recent attention due to their ability to promote determination and resiliency, especially under conditions of extreme stress. These dispositional adaptive readiness predictors are expected to serve two key purposes in the proposed research. First, from a leader perspective, they are expected to be a significant antecedent predictor of leader behaviors and functions. Second, from a individual team member perspective, these dispositional competencies can serve as potential moderators to attenuate the leader behavior, especially in the case in which adaptive team members may be able to overcome the lack of effective leadership behaviors in extreme environments.

In 2006, Ployhart and Bliese developed and provided construct validity for a measure of individual adaptability called the I-ADAPT. Building upon the Pulakos et al. (2000) adaptability dimensions, they sought to create an individual difference measure that could be used to predict pre-dispositions toward readiness for training, organizational change, technology, and the ability to adaptively respond to task, position, or environmentally driven changes. Using a 55-item measure that reflected the eight adaptability dimensions, Ployhart and Bliese (2006) were able to link this multifaceted pre-disposition to both task and contextual performance through a series of mediating

processes (e.g., situation perception and appraisal; strategy selection; self-regulation and coping; and knowledge acquisition). While still moderated by changing environmental adaptability requirements, the authors provide an empirically supported construct that holistically represents the knowledge, skills, attributes, and other abilities (KSAOs) necessary to facilitate successful performance in these domains. Additionally, since this construct is a product of existing and developing KSAOs, it reflects a semi-malleable nature that can change and grow based on newly acquired experiences. Thus, it may serve as a potentially important indicator for the potential to behave or lead in an adaptive manner.

Past research on individuals who were deemed more successful and influential than their counterparts typically possessed traits above and beyond that of normal ability (Cox, 1926; Galton, 1869; Terman & Oden, 1947). While ability was still critically important, these individuals also possessed "zeal" and "persistence of motive and effort," leading Duckworth, Peterson, Matthews, & Kelly (2007) to propose the construct of grit as a positive, non-cognitive trait that taps into an individual's passion for a long-term goal and continued motivation to achieve that goal in the face of obstacles or challenges. They provided consistent evidence suggesting that grit is negatively related to general intelligence and successfully predicts achievement and performance across a wide variety of samples and settings (2007; Duckworth & Quinn, 2009), as well as positively predicting happiness and life satisfaction (Singh & Jha, 2008). Duckworth and colleagues believe this dual-component (e.g., passion and perseverance) of grit to be the crucial differentiator from similar constructs (e.g., hardiness: Maddi, 2007), specifically that grittier individuals could adapt to changes within their environment and maintain their determination and motivation over *long* periods of time despite experiences with failure and adversity. Their passion and commitment towards the long-term objective is the overriding factor that provides the stamina required to "stay the course" amid challenges and set-backs.

A second pre-dispositional trait that is expected to facilitate adaptive responses to task, situational, and environmental changes is resilient nature of hardiness (Bartone, 2006; Maddi, 2007). This trait reflects a three-component construct focused on aligning internal perspectives and external influences. Its first two components represent internal states in which one possesses a strong tendency to view experiences as interesting and a conviction that they have the ability to influence and potentially control the events they in turn experience (Bartone, 2006; Kobasa, 1979). The third component reflects using the first two as filters to interpret and make sense of external events, such that the individual tends to approach significant change-events as learning experiences that in turn facilitates meaning-making and results in a resilient ability to recover from traumatic events more efficiently than less-hardy individuals (Bonnano, 2004; Maddi, 1967). In an age where action teams are expected to ply their trade in highly stressful and sometimes traumatic environments, possessing a hardy disposition has proven to be a significant attenuator to the development of depression, combat stress, post traumatic stress disorder (PTSD), and suicide ideation (Bartone, 1996; 2000; Florian, Mikulincer, & Taubman, 1995; Westman, 1990). As an extension of this post-action or recovery perspective, it is plausible that

possessing this resilient nature should also assist in mission preparation (i.e., possessing the proper mindset for the upcoming mission and understanding the potential contingency behaviors and actions), as well as facilitating appropriate actions in the execution phase.

The current model proposes that adaptive potential as measured by the I-ADAPT as well as the pre-dispositional competencies of grit and hardiness serve as critical antecedent traits necessary for an individual to adapt to changes within his/her environment, particularly with respect to impacts on motivation and desire to achieve an established and relevant goal. Using an adaptive performance perspective within an extreme context, the ability to adapt, persevere amid the myriad of environmental challenges and unanticipated obstacles, and exhibit a resilient nature represents a highly valued competency. How well or how poorly one recognizes, understands, and adapts to the advantages and/or disadvantages of a situation can significantly determine eventual success or failure. The compressed timeline, often insufficient information and communication flow, increased complexity of task and team monitoring, and high degree of consequences all combine to create an environment that is understandably overwhelming (Kozlowski & Bell, 2008; Mueller-Hanson et al., 2005). When one adds the necessity to continue the action, even in the event that past decisions resulted in catastrophic loss, the adaptive leader in extreme contexts must possess a resiliency factor that promotes perseverance.

An ancillary benefit of these unique pre-dispositional competencies is their potential to serve in emergent team level processes. Although not among the traditional examples that have received attention over the past decade (i.e, team confidence, team empowerment, cohesion, climate etc.), grit and hardiness may represent an addition due to their potential individual-level impact on team inputs, processes, and outcomes. For example, a leader's grit and hardiness operationalized respectively as an unwavering determination and calculated persistence toward accomplishing a complex task and the ability to rapidly recover from a highly traumatic event or experience could result in a sense of competency contagion (cf. Barsade, 2002; Hatfield, Cacioppo, & Rapson, 1993; Johnson, 2008), with indirect effects at the team level.

> *Hypothesis 3. The pre-dispositional competencies of I-Adapt, grit, and resilience: 1) directly and positively affect individual task- and relational-oriented outcomes; 2) indirectly affect team task- and relational-oriented outcomes through individual task- and relational-oriented outcomes; and 3) moderate the effect of leader behavior on individual task- and relational-oriented outcomes.*

Adaptive Performance Outcomes. Yukl observed that covering a wide range of objectives valued by the organization serves as the most appropriate first step in determining performance effectiveness criteria (2008). The current model uses the term *behaviors* to signify the actions (or performance; Campbell et al., 1992) people do that contribute to effectiveness outcomes such as: 1) individual- or group-produced outputs; and 2) the development or enhancement of existing individual- or group-capabilities (Hackman, 1987; Sundstrom, DeMuese, & Futrell, 1990). As such, it incorporates a multilevel combination of task- and relational performance outcome measures. From the task perspective, the content of measurement consists of task-oriented outcomes directly relate to how well an established task was performed as well as a degree of readiness to

engage in a follow-on performance episode. This individual level focus provides a direct assessment of overall task effectiveness. Adding team performance outcomes allows for the examination of leadership effects at the group-level of analysis and provides an opportunity to explore the reciprocal and emergent relationships across level (Salas, Stagl, Burke, & Goodwin, 2007). The selected relational-oriented measures (e.g., cohesion, trust, and self-/collective efficacy) serve as the proverbial glue that aids in creating the synergy required to enhancing individual member effectiveness, minimize process loss, and achieve a collective result better than achievable via individual effort (Hackman & Wageman, 2005; Zaccaro, Heinen & Shuffler, 2009; Zaccaro, Rittman, & Marks, 2001).

Cohesion. The first variable, cohesion, is typically considered an emergent state from the groups literature (Kozlowski & Ilgen, 2006) as the bonding of individuals with a team or organization (Eisenberg, 2007; Piper, Marrache, Lacroix, Richardson, & Jones, 1983). This bonding emerges from what Festinger (1950) described as "the resultant of all the forces acting on the members to remain in the group" (p.274). As a multidimensional construct (Kozlowski & Bell, 2003), cohesion has been studied from both the more popular interpersonal (or social) perspective in which individuals are both attracted to and feel like valued members of a group, to a more task-related perspective in which there is a sense of collective identity and commitment based on shared goals and goal accomplishment (Beal, Cohen, Burke, & McLendon, 2003; Carron, 1982; Zaccaro & Lowe, 1988). As the magnitude of cohesion grows within a group or team, it facilitates more effective communication and efficient coordination (Mullen & Cooper, 1994). Reviews on cohesiveness have found positive relationship with performance outcomes (e.g. Guzzo & Shea, 1992; Smith et al., 1994; Zaccaro, Gualtieri & Minionis, 1995) as well as meta-analytic evidence supporting cohesion's predictive power towards both performance behaviors and outcomes (Beal et al., 2005). In an extreme context, a cycle of shared hardships that include intense preparation and training as well as the sometimes traumatic events experienced during an action cycle may serve as a driver that observes the emergence and continued strengthening of cohesion over time within a group or team. It is also anticipated that this development of can create a climate that fosters beliefs in individual competencies that then translate into higher levels of collective confidence.

Self-efficacy and Collective Efficacy. The concept of self-efficacy revolves around the beliefs one has regarding his/her ability to successfully perform a given behavior in relation to a designated goal (Bandura, 1977). Research suggests that this belief facilitates initiation of behavior, effort expenditure, and maintenance of behavior over time (c.f., Vroom & Yetton, 1973). At the team level, this collective efficacy translates into a shared sense of collective competence that serves to coordinate and synchronize combined actions as demands require (Zaccaro, Blair, Peterson, & Zazanis, 1995). As efficacy increases, the individuals and teams become more adept at initiating behavior, expending additional energy toward a task, and maintaining a designated degree of effort over time (Holladay & Quinones, 2003). Research suggests a positive relationship between self-efficacy and performance (Earley, 1994; Yeo & Neal, 2006). When explored in an extreme context, it is anticipated that successful leader behaviors

serve to facilitate self-efficacy and assist in shaping individual- and team- level beliefs that potential threats and dangers can be overcome. This is turn prompts renewed drive to engage in required behaviors to accomplish new and often daunting tasks.

***Trust** (and its ancillary effects on **Confidence, Motivation, and Morale**).* Effective leaders provide purpose, direction and motivation to others in order to accomplish a set goal. Thus at its most basic form, leadership is an influencing process between the leader and the led. While most leaders enjoy some form of legitimate power in their respective position, those who engender referent power tend to lead more effectively due to shared identification, admiration, and respect (French & Raven, 1959; Hersey & Blanchard, 1988). In teams exposed to high levels of extreme contexts, this base of power stems from the trust that develops within the relationship over time and experience. Sweeny (2007) defined trust as "one's willingness to be vulnerable to the actions of another person (leader subordinate, or peer), based on a sense of confidence in the other person's competence to meet role requirements and character" (p. 252). As such, trust embodies a willingness to subordinate personal interests and well-being to the leader (and each other) based on the belief in the competency within group members (Burke, Sims, Lazzara, & Salas, 2007; Colquit, Scott, & LePine, 2007). Thus, a cycle is created in which competency provides the fertile soil for trust to grow and develop, which in turn sets conditions for future effective performance in these unique contexts. Research on critical action organizations (CAOs) and high performance teams suggests that under the severe stress and confusion found in extreme contexts, followers' behavior and performance is significantly influenced by their trust in leadership (Belenky, Noy, & Solomon, 1985; Sweeny, Thompson, & Blanton, 2009). Executing complex, highly interdependent, and dangerous tasks in which loss of life is a potential consequence, trust within the unit may prove a vital, as opposed to optional ingredient in leadership (Hannah, Campbell, & Matthews, 2010). Inability to fulfill a critical leader or team member function can result in a collective catastrophic loss (Hamby, 2002; Weick, 1993).

If one were to imagine trust as a superordinate competency, critical to effective leader and team performance in extreme contexts, it is plausible that this trust-performance linkage would have ancillary subordinate effects on similar relational competencies such as confidence, motivation, and morale. Similar to beliefs in self-efficacy, members' gain confidence in their own competence and competencies of their teammates as they share, experience, and succeed in difficult tasks (Goud, 2005). This in turn can serve as an impetus for increased motivation towards striving for common yet difficult goals and the persistence and effort required to achieve them (Klein, Wesson, Hollenbeck, & Alge, 1999; Locke & Latham, 1990), as well as increasing and/or maintaining team member morale by building upon and capitalizing on the competency strengths of the team (Mueller-Hanson et al., 2005; c.f., Fleishman & Zaccaro, 1992; Zaccaro, 2001).

> *Hypothesis 4. Individual task- and relational-oriented outcomes positively relate to proposed team-, task-, and relational-oriented outcomes.*

Temporal Nature of the Model (Exploratory Hypothesis 2). The final research question in the proposed model explores how time may impact the effect of leader behavior on

intact teams. The current sample and method allows for the examination of how a leader's behaviors facilitate adaptive readiness in teams over time. As opposed to past adaptability research that used newly created teams, the focus of the current research is to examine these processes on pre-existing action teams. As an *intact* team, it is plausible to assume that the leader and team members have had ample opportunity to engage in several team processes prior to the proposed data collection. Not only are the intact teams bringing a set of pre-developed and established behaviors and processes conducive to successful adaptive performance (e.g., shared mental models of familiar task- and team-work; see Randall, Resick, & DeChurch, 2011), but they are also being inserted into a training setting that matches preconceptions of environments of which they are familiar. As alluded to in the introduction, based on leader behaviors, levels of situational load, and the order in which the team engages in selected scenarios, the proposed research can provide a unique, longitudinal examination of the adaptive growth in team performance over time. If the team arrives at the onset of the rotational scenarios with an advanced level of adaptive readiness, the level of team familiarity and experience may attenuate the leader behaviors. If the team is still in the development and learning stage, it may be of great interest to determine how the leader behaviors reflect a relative magnitude of importance. Additionally, early team successes and/or failures within scenarios may have differential impacts on the relative importance of subsequent leader behaviors. For example, early successes in a task engagement cycle indicate that preparation activities on the part of both the leader and team were sufficient in facilitating success and thus reduced the enhanced need for the leader to engage in the identification of self- and team-shortcomings (e.g., attitudes, behaviors, cognitions) and implement action-oriented interventions in areas of task performance, team coordination, strategy adjustment, and situational updates (see Kozlowski, Gully, Salas, & Cannon-Bowers, 1996; Kozlowski et al., 2010). Alternatively, it is possible that leader behaviors become more influential after the team encounters early failures, prompting additional effort to not only correct the taskwork aspect of the scenario or mission, but also to address the increased need for relational-oriented components (e.g., motivation, morale, cohesion). Because there is a dearth of empirical evidence examining these temporal growth relationships in adaptive environments, these questions will be examined in an exploratory manner as exhibited by the exploratory hypothesis 2 (EH2) regarding leader's impact on adaptive experiential growth by an intact team over time in Figure 1.

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CURRICULUM VITAE

LTC Eric J. Weis received his Bachelor of Science degree in Psychology from James Madison University in 1992. He was a Distinguished Military graduate and was subsequently commissioned as an Infantry Officer in the United States Army. After spending nine years in command positions from platoon leader through company commander, Eric was given an opportunity to achieve a Master of Science in Social Psychology from The Pennsylvania State University in 2003. He then performed a two-year assignment as an Assistant Professor of Psychology at the United States Military Academy. Following this academic tour, Eric returned to the operational Army in 2005 and deployed twice to combat in participation of Operation Iraqi Freedom. Upon graduation from George Mason University, Eric will assume the role of Deputy Director of the Simon Center for the Professional Military Ethic and serve as course director of the capstone Leadership and Ethics course at the United States Military Academy.

Selected Publications and Presentations

Zaccaro, S. J., Weis, E. J., & Chen, T. R. (2012). *Situational load and personal attributes: Implications for adaptive readiness and training.* In H. F. O'Neil, R. S. Perez, & E. L. Baker (Eds.), Teaching and measuring cognitive readiness. New York: Springer.

Weis, E. J., Chen, T. R., Zaccaro, S. J., May, M., & Matthews, M. (2012). Cognitive and dispositional predictors of leader adaptability under stress. Poster accepted at 2012 Annual Meeting of the Society of Industrial and Organizational Psychology, April , San Diego, CA.

Amos, B. J., Weis, E. J., Grim, A. M., Black, L. D., & Zaccaro, S. J. (2012). Extreme leadership: A contextual and temporal model of adaptive readiness. Interactive poster accepted at 2012 Annual Meeting of the Society of Industrial and Organizational Psychology, April, San Diego, CA.

Weis, E. J. (April 2012). Panelist on leader training and development under stress. Committee on mine safety: Essential components of self-escape. Division of Behavioral Social Sciences and Education, National Research Council. Washington, D.C.

Zaccaro, S. J., Weis, E. J., Hilton, R., & Jeffries, J. (2011). *Building resilient teams.* In M.D. Matthews & P. Sweeney (Eds.) Leadership in Dangerous Situations. Annapolis, MD: Naval Institute Press.

Weis, E. J. & Amos, B. J. (2011). Adaptive readiness behaviors of combat leaders across performance episode phases. Poster accepted at Promising Practices for Healing Psychological Trauma of Service Members, Families, Veterans, and Community, May 13, George Mason University, VA.

Mullins, H., LaPort, K., DeRosa, G., & Weis, E. J. (2011). Identifying and assessing leader emotion management dimensions. Poster accepted at Annual Meeting of the Society of Industrial and Organizational Psychology, April 11-14, Chicago, IL.

Weis, E., J. (2010). Translating combat lessons learned to the corporate environment. Presentation given to the Washington DC chapter of AFCEA (Armed Forces Communication and Electronic Association), June 23, Crystal City, VA.

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Weis, E., Hampton, S., & Davis, T. (2004). Using the CRAFT of teaching to inspire students beyond psychology. Proceedings for the 18th Annual Conference on the Teaching and Learning of Psychology: Ideas and innovations, Monticello, NY.