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Research Report 1870

The Application of a Model of Adaptive Performance to Army Leader Behaviors

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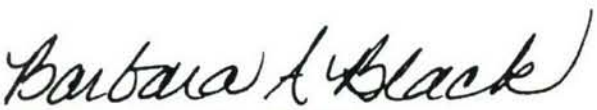

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14. ABSTRACT *(Maximum 200 words)*
The present research sought to better define the junior Army leader behaviors reflecting adaptive performance and offer recommendations for enhancing these adaptive capabilities. Pulakos and colleagues' (2000) eight-dimension model of adaptive performance was applied to leader behaviors performed in operational and training contexts. The present research also included White and colleagues' (2005) *Leads an Adaptable Team* dimension. Interview data from two different archival datasets were examined. Results showed that the majority of the incidents generated by leaders in operational contexts reflected two dimensions of the model: *Deals with Uncertain and Unpredictable Work Situations* and *Handles Emergencies or Crisis Situations*. Many of the remaining incidents tapped three other dimensions: *Solves Problems Creatively*, *Learns Work Tasks, Technologies, and Procedures,* and *Handles Work Stress*. For the trainers, the majority of the incidents tapped three dimensions of the model: *Solves Problems Creatively, Leads an Adaptable Team,* and *Deals with Uncertain and Unpredictable Work Situations*. For both research projects, the model sufficiently addressed the adaptive capabilities described in the critical incidents when it was modified to include specific military leadership behaviors. However, not all of the dimensions were represented in each sample. Differences in the adaptive capabilities between the two research projects are most likely due to the limitations of the training research project. Recommendations for developing training programs aimed at maximizing

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We would like to thank the Observer/ Controllers and Opposing Force Soldiers at the Joint Readiness Training Center for their valuable insights provided during interviews on issues related to leader adaptability and the cognitive demands facing small unit leaders in contemporary operating environments. The information obtained will be used to guide the development of prototype methods for training and assessing skills underlying effective small unit leader adaptive behavior.

We also extend thanks to the officers and noncommissioned officers in the Infantry Captains Career Course (ICCC), the Basic Noncommissioned Officer Course (BNCOC), and the Advanced Noncommissioned Officer Course (ANCOC) who took the time to participate in this research and share their many insights with us.

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THE APPLICATION OF A MODEL OF ADAPTIVE PERFORMANCE TO ARMY LEADER BEHAVIORS

EXECUTIVE SUMMARY

Research Requirement:

Although there is much anecdotal evidence to support the need for junior Army leaders to possess a high level of adaptability, the present research sought to better define the leader behaviors associated with adaptive performance and offer recommendations for enhancing these capabilities. Specifically, by applying a nine-dimension model of adaptive performance (based on the work of Pulakos, Arad, Donovan, & Plamondon, 2000 and White et al., 2005) to leader behaviors performed in operational and training contexts, we determined whether the model is appropriate to describe the behaviors in these settings. Although Pulakos et al.'s findings included the adaptive dimensions most critical for Infantry noncommissioned officers (NCOs), it is important to determine whether these capabilities have changed due to recent combat experiences. Additionally, since previous empirical work on the model focused primarily on lower-level, non-managerial jobs (Pulakos et al., 2000), there is a need to further investigate the dimensionality of adaptive performance for leaders of organizations as their job requirements may differ substantially from non-managerial positions. Thus, a second goal of the present research was to determine whether the model addressed all of the adaptive capabilities of leadership positions for which adaptability is an important factor of job performance. A final goal of the research was to investigate training methods that may aid in maximizing adaptive performance.

Procedure:

The present research examined interview data from two different archival datasets from research conducted by the U.S. Army Research Institute (ARI). Both research projects collected critical incidents of adaptive performance from U.S. Army officers and NCOs. In the Combat Veterans Project, the participants were asked to describe situations in which they responded adaptively in operational contexts (i.e., combat tours). In the Joint Readiness Training Center (JRTC) Project, the participants were asked to describe situations in which they performed adaptively or observed adaptive responding in training contexts. For both projects, the participants also were asked to describe how they prepared themselves for situations that required adaptive responding or the training methods that would promote leader adaptability.

Pulakos et al. (2000) provided empirical support for an eight-dimension model of adaptive performance across a range of jobs, occupations, and task demands. White et al. (2005) modified this model for an Army training program by adding a dimension, *Leads an Adaptable Team*. For the present research, the model was applied to the interview data such that two of the authors of this report categorized the incidents reflecting adaptive performance according to the nine dimensions. The initial inter-rater percentages of agreement ranged from 53% to 64% across the two research projects. Differences in the raters' judgments were discussed to consensus.

Findings:

Overall, for both research projects, the nine-dimension model sufficiently addressed all of the adaptive capabilities when the definition for the *Leads an Adaptable Team* dimension was modified to include the delegation of leadership responsibilities. No additional adaptive performance dimensions were suggested by the incidents. However, not all of the dimensions were represented in each research project. In general, the participants for both research projects did not generate many incidents reflecting the interpersonal, cultural, or physical adaptability dimensions, which could be due to the military nature of the samples and/or limitations of the training research project.

Although there were some differences in the percentage of incidents generated per category, the majority of the incidents tapped similar adaptive capabilities *within* each research project. For the combat veterans, the majority of the incidents generated by both officers and NCOs reflected two dimensions of the model: *Deals with Uncertain and Unpredictable Work Situations* and the *Handles Emergencies or Crisis Situations*. Many of the remaining incidents tapped three other dimensions: *Solves Problems Creatively*, *Learns Work Tasks, Technologies, and Procedures*, and *Handles Work Stress*. For the trainers, the majority of the incidents tapped three dimensions of the model: *Solves Problems Creatively, Leads an Adaptable Team,* and *Deals with Uncertain and Unpredictable Work Situations*. The differences in the findings between the two research projects are most likely due to the limitations of the training research project.

The findings for both research projects suggest that training programs should focus on helping leaders learn how to develop adaptive teams. Many of the leaders suggested training that develops behaviors such as including subordinates in the planning process, listening to subordinates ideas, allowing subordinates to make independent decisions, and delegating leadership responsibilities to the lowest level. Further, the findings suggest that the ability to communicate intent to team members may be a critical factor in developing adaptive responding skills in units. The concept of commander's intent may help to build shared mental models of the mission which allow subordinates to act independently in the absence of orders or when communication is reduced.

Across both research projects, the findings also indicate that training programs should develop skills for dealing with unpredictability such as requiring leaders to perform effectively when the goals of the mission change or when the environment changes (e.g., from threatening to non-threatening). Simulations or realistic field exercises that provide leaders with the opportunity to plan for contingencies, prioritize actions, create new plans as the mission changes, and make decisions in different situations may be effective for developing this adaptive capability. Many of the leaders also reported that developing creative problem solving skills is critical to enhance adaptive responding. Computer simulations or paper and pencil vignettes that challenge leaders to consider different ways of accomplishing the mission, analyze problems from multiple perspectives, and assess the outcomes of their decisions would aid in the development of this adaptive capability.

Utilization and Dissemination of the Findings:

The findings from this research should be useful for the U.S. Army Training and Doctrine Command (TRADOC) community to identify the adaptive capabilities of specific duty positions. Further, the training recommendations described in this report offer guidance for developing programs aimed at maximizing adaptive performance. Junior Army leaders would benefit from receiving adaptability training early in their military careers.

THE APPLICATION OF A MODEL OF ADAPTIVE PERFORMANCE TO ARMY LEADER BEHAVIORS

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Adaptive behavior has received increased attention as an important factor of job performance as new workplace demands require employees to be more flexible and tolerant of uncertainty to successfully perform in dynamic, competitive environments (e.g., Burke, Pierce, & Salas, 2006; Hesketh & Neal, 1999; Ilgen & Pulakos, 1999; Pulakos et al., 2000). This is especially evident for military leaders as they respond to the complexity and unpredictability of counterinsurgency and nation-building in postwar Iraq (cf. Wong, 2004). To perform effectively in the "fog of war," especially in response to asymmetric threats, small unit leaders have improvised solutions to unanticipated problems, performed additional duties outside of their specialties, and adjusted to situations that change from non-threatening to threatening instantaneously (e.g., Wong, 2004).[1] This type of performance has been defined as adaptability or "an effective change in response to an altered situation" (White et al., 2005, p. 2). Thus, adaptable small unit leaders not only demonstrate changes in behavior in response to altered situations, but they also achieve successful results through the actions of their unit (White et al., 2005).[2] This report examines adaptability as a critical factor of junior Army leadership in the current operational environment (COE) and U.S. Army doctrine, then presents an existing model of adaptive performance and determines the appropriateness of the model for data collected from officers and noncommissioned officers (NCOs).

Leadership and the COE

The COE is characterized by a combination of combat (e.g., high-intensity combat, small-scale strike operations, counter-insurgency missions) and stability and support operations (e.g., international peace treaty enforcement, humanitarian relief operations; Department of the Army, 1999b; Gold & Hartzog, 2006). These are the type of operations that have been conducted in Iraq and Afghanistan after the major combat (Gold & Hartzog, 2006) and reflect the increased complexity of military operations since the end of the Cold War. These operations mix conventional warfare with humanitarian crises in urban environments (Department of the Army, 1999b) and require leaders to have the intellectual agility and adaptability to quickly adjust to changes in missions (e.g., from anti-terrorism to peacekeeping; Williams, 2003). Because tactical actions performed in these complex situations often have strategic implications, military leaders assert that small unit performance is the key to success and that units and their leaders are strategic assets (Gold & Hartzog, 2006). Junior Army leaders "are expected to read these situations quickly, understand all the relevant military and political nuances, and act appropriately, at times in the absence of unambiguous orders" (Lyons, 2004, p. 25-26). The ability of the small unit leader to make effective decisions and take action at the appropriate

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[1] Small unit leaders are platoon leaders (Lieutenants) who lead platoons (approximately 40 individuals) or squad leaders (Staff Sergeants) who lead squads (9 individuals). They are often referred to as "junior leaders" because they typically either have less experience in the Army and/or have less experience leading units.

[2] The focus of this report is on adaptive leader behaviors, thus a review of team adaptation is beyond the scope of this report. Please see Burke, Stagl, Salas, Pierce, and Kendall (2006) for the core processes and emergent states underlying adaptive team performance. Burke et al. consider leadership to be a situational characteristic, which affects the degree to which a team capitalizes on process gains and creates adaptive coordinated action.

time, in the absence of direct supervision, affects both tactical and strategic outcomes (Adkinson, 2000; Lyons, 2004).

The COE also is characterized by asymmetric warfare which is described as "radically unconventional, non-linear, and unconstrained strategies perpetrated by adversaries of mostly non-governmental and non-state actors designed to exploit critical U.S. vulnerabilities" (DHaiti, 2003, p. ii).[3] Wyszynski (2005) discussed several different forms of asymmetric warfare and suggested several leader behaviors that may mitigate the effects of these asymmetries. For example, asymmetry of method occurs when adversaries use different tactical doctrines such as human shields and suicide bombers. Such dynamic environments demand that leaders maintain increased situational awareness, understand the capabilities of their unit as well as their adversaries, display confidence and self-control, and be more adaptive and resilient than the enemy. Similarly, Wyszynski explained that U.S. forces face an asymmetry of organizations when the enemy is not structured in a hierarchical fashion but is organized into networks with loyalties to tribes, clans, or movements. Identifying the enemy can be problematic for U.S. forces as individuals obscure their associations. To mitigate the effects of this type of asymmetry, Wyszynski suggested that leaders should clearly express intent and issue orders based on that intent. As noted by Williams (2003), the multifaceted nature of asymmetric warfare adds to the complexity and uncertainty of the COE and requires leaders to have the intellectual agility and adaptability to quickly adjust to a full-spectrum of operations at all levels of war (conventional, unconventional, anti-terrorist, humanitarian, peacekeeping, etc.).

As a result of COE challenges, there has been an increased focus on adaptability and related cognitive skills (e.g., mental agility and the ability to view situations from multiple perspectives) as critical aspects of leadership (Kidd, 2002; Leonard, Polich, Peterson, Sortor, & Moore, 2006; Lyons, 2004; Tillson et al., 2005). From their experiences in Operation Enduring Freedom (Afghanistan, OEF) and Operation Iraqi Freedom (OIF), junior leaders learn to be adaptable, creative, innovative, and confident in their abilities (Wong, 2004). They execute combat missions for which they have never trained, plan for operations that are beyond Army doctrine, and lead Soldiers in both counter-insurgency and nation-building activities (Wong, 2004). Additionally, junior leaders often perform activities in theater that are typically the responsibility of specialists or higher echelon personnel such as information and psychological operations and public affairs duties (Wong, 2004). Therefore, they need the mental skills to take on additional duties both within and outside of their combat specialty (Wong, 2004). Junior leaders also are expected to perform these roles within cultural environments that often differ from their own. As leaders interact with the local populace in nation-building activities, they must attend to the nuances and intricacies of the local culture as these interactions have potential strategic implications (Wong, 2004).

In a review of the small unit leadership lessons learned from a variety of Military Operations Other Than War (MOOTW), Adkinson (2000) identified the following three key competencies for effective leadership in decentralized environments (i.e., the three-block war): 1) the ability to change and adapt leadership techniques and roles to meet the demands of the environment (e.g., possess skill sets other than warfighting); 2) the ability to make decisions in

[3] For a complete review of the nature of asymmetric threats and a historical account of how these differ from the symmetric major power that was characteristic of the Cold War, see Tillson et al. (2005).

the absence of higher supervision (i.e., have an understanding of commander's intent); and 3) the ability to develop leadership skills in team members (i.e., empower decision-making at the lowest level).[4] Similarly, in a review of the leadership requirements for the COE, Leonard et al. (2006) recommended that increased attention be given to developing the following three classes of skills because these skills have become either more important, more complex, or are required at lower levels of leadership: 1) general cognitive skills to support more rapid and adaptive decision making (e.g., devising courses of action to novel situations), 2) specific operational skills (e.g., performing joint operations, dealing with civilian populations, conducting operations in urban terrain, using technology for situational awareness), and 3) breadth of perspective and knowledge including cultural awareness. They asserted that the complex skill of executing operational decisions is becoming a requirement of lower echelons, thus affecting more junior officers at earlier points in their careers.

To assess whether the Army is adequately preparing its officers and NCOs to lead in the current and future operational environment, the Army's Chief of Staff, General Shinseki, chartered the Army Training and Leadership Development Panel (Department of the Army, 2001a; 2002a). The panel concluded that adaptability and self-awareness are requisite leader competencies to execute full spectrum operations "in a complex environment marked by the challenges of high intensity combat and the ambiguities inherent in stability operations and support operations" (Department of the Army, 2001a, p. OS-3). They also defined adaptability as "the ability to recognize changes to the environment; assess against that environment to determine what is new and what to learn to be effective; and the learning process that follows...all to standard with feedback" (Department of the Army, 2001a, p. OS-3).

In summary, the COE has been described as dynamic, complex and fluid with changing coalitions, alliances and partnerships and, as such, poses considerable challenges for junior Army leaders (e.g., Ervin & Decker, 2000). One can expect Soldiers to have difficulty switching from constant vigilance on the battlefield to performing stability and support operations (Claburn, 2004). The present research addresses the need for a better understanding of the types of leader behaviors that reflect adaptive performance. By applying a model of adaptive performance to leader behaviors performed in operational and training contexts, the present research sought to better define the junior Army leader behaviors associated with adaptive performance and offer recommendations for enhancing these adaptive capabilities.

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[4] Adkinson (2000) described the "three-block war" as when the full spectrum of operations occurs within the span of three contiguous city blocks such as distributing humanitarian aid on one block, separating warring tribes on the second block, and engaging in full-scale firefights on the third block.

"The commander's intent is a clear, concise statement of what the force must do and the conditions the force must meet to succeed with respect to the enemy, terrain, and the desired end state. Intent, coupled with mission, directs subordinates toward mission accomplishment in the absence of orders." (Department of the Army, 2001b, p. 5-14).

Examining Adaptability within Doctrinal Sources

A review of U.S. Army doctrine revealed that leaders are required to possess certain values, knowledge, skills, and attributes reflecting adaptive qualities. Although a complete historical review of this doctrine is beyond the scope of this report, several key documents are cited that instruct leaders to:

(1) Demonstrate creative thinking, adopt a systems perspective, and quickly recognize and respond to changes in the situation
(2) Delegate decision-making responsibilities to subordinates to encourage initiative
(3) Communicate commander's intent so that subordinates will respond adaptively in uncertain situations
(4) Understand nonlinearity and the unintended consequences of decisions and incorporate flexibility into plans
(5) Use intuitive decision-making approaches in addition to the analytic military decision-making process (MDMP).

A more detailed review of the aspects of Army doctrine related to adaptive performance follows.

Demonstrate Creative and Systemic Thinking, Quickly Recognize and Respond to Changes, and Delegate Decision-making Responsibilities

The Army's doctrinal source for leadership, FM 22-100, states, "in combat, success comes from creative, flexible decision making by leaders who quickly analyze a problem, anticipate enemy actions, and rapidly execute their decisions" (Department of the Army, 1999a, p. 6-16).[5] Effective organizational leaders are characterized as those who promote initiative and risk-taking, delegate decision making to the lowest level, and empower subordinates to make decisions within the realm of their responsibility. Further, the FM directs organizational leaders to adopt a systems perspective and consider how their decisions will affect other teams and organizations. In doing so, leaders may be able to predict second-and third-order effects (i.e., indirect effects of decisions) as well as leverage systems to increase their ability to achieve organizational goals and objectives.

FM 22-100 discusses that direct leaders are required to make difficult decisions that involve imagination and rigorous thinking and analysis, thus, junior leaders should possess critical reasoning and creative thinking skills. The FM also encourages direct leaders to find better ways of operating by learning from their experiences, receiving feedback from their subordinates, and avoiding the creation of "zero-defects" environments (Department of the Army, 1999a).[6] Direct leaders should fight the tendency toward rigid thinking by challenging themselves, using their imaginations, asking other people how they do things, listening to their subordinates, and using mistakes to figure out how to do things better.

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[5] For an historical account of this doctrine and a discussion of requirements for future leaders, see Horey et al. (2004) and Leonard et al. (2006).

[6] Zero-defects environments are situations in which a leader expects no mistakes or problems to occur (Department of the Army, 1999a).

The follow-on to FM 22-100, FM 6-22, identifies adaptability as a key leadership skill and defines it as "an individual's ability to recognize changes in the environment, identify the critical elements of the new situation, and trigger changes accordingly to meet new requirements" (Department of the Army, 2006, p. 10-8). FM 6-22 also provides a similar definition to White et al.'s (2005) in their report for developing adaptive proficiency in Special Forces (SF) officers: "adaptability is an effective change in behavior in response to an altered situation" (Department of the Army, 2006, p. 10-8). Adaptable leaders are described as individuals who are comfortable with ambiguity, flexible, innovative, passionate learners, open-minded, risk-takers, resilient to setbacks and who will consider multiple perspectives, smoothly handle multiple demands and priorities, and face challenges with the resources available. Furthermore, the FM suggests that adaptable leaders are able to quickly assess the situation, determine the requirements for performing in the changed environment, and quickly change practices if needed.

The Army's doctrinal treatise on the conduct of full spectrum operations, FM 3-0, states, "Soldiers and leaders must exercise mature judgment and initiative under stressful circumstances and be capable of learning and adapting to meet the demands of the full spectrum operations...Success comes from imaginative, flexible, and daring Soldiers and leaders" (Department of the Army, 2001b, p. 1-18). Further, effective battle command requires leaders to visualize the situation and use their judgment, training, and creative thinking to make decisions. The FM posits that agile leaders are able to "quickly comprehend unfamiliar situations, creatively apply doctrine, and make timely decisions" (Department of the Army, 2001b, p. 4-17).

In discussing the requisite skills of future leaders, TRADOC Pamphlet 525-66, Force Operating Capabilities, indicates that future force Soldiers and leaders will execute operations in full-spectrum battlefields as part of joint forces (Department of the Army, 2005a). TRADOC Pamphlet 525-66 notes that an escalating operations tempo will require leaders to possess exceptional critical reasoning and creative thinking skills in order to quickly synthesize information and conceptualize friendly courses of action (COAs), make intuitive assessments of situations, and adjust and adapt their thinking and tactical decisions to rapidly changing situations. To prepare leaders for these challenges, TRADOC emphasized that training programs will develop leaders who are self-aware, versatile, adaptive, and agile and who possess tactical and technical experience and critical thinking skills (Department of the Army, 2005a). The leadership development process also will train leaders to employ a wide-range of new information technologies and data systems in a networked environment and to use the cultural dimension of the battlespace to their advantage (Department of the Army, 2005a).

Communicate Commander's Intent to Promote Adaptive Responding

FM 22-100 instructs leaders to establish a climate of trust, share their intent and overall purpose of the mission, and to train subordinates in the decision making process so that they are more likely to take charge if needed (Department of the Army, 1999a). Army leaders have noted that a clearly understood mission and higher commander's intent link adaptive decision making with leadership (Moilanen & Craig, 2000). In fact, FM 6-22 stresses, "successful mission command results from subordinate leaders at all echelons exercising disciplined initiative within the higher commander's intent" (Department of the Army, 2006, p. 10-8). Further, the Marine

Corps Doctrinal Publication (MCDP) 1, *Warfighting*, asserts that subordinates, who understand the intent of the commanders at least two levels above them, use their judgment and initiative in unforeseen circumstances and depart from the original plan in ways that are consistent with the purpose of the mission (Department of the Navy, 1997).

Similarly, FM 3-0 emphasizes that in unclear situations, effective leaders display initiative when they act independently within the commander's intent. By delegating decision-making authority to the lowest level, leaders encourage their subordinates to also act independently to achieve the commander's intent and accomplish the mission. When subordinates exhibit initiative the force demonstrates tactical agility.[7] Additionally, the FM discusses that adaptive leaders can maximize the versatility of the forces when they know the capabilities of each unit and duty position and then tailor the forces' responsibilities and requirements for each mission. By doing so, leaders increase the ability of the forces to meet the diverse requirements of full spectrum operations and contribute to the agility of Army units.

Further, the concept of commander's intent may be especially critical for future force leaders as they execute missions with geographically distributed teams. TRADOC asserted that leaders must be able to effectively communicate their intent, which will foster decentralized small unit initiative and cohesion (Department of the Army, 2005a).

Understand Nonlinearity and the Unintended Consequences of Decisions and Incorporate Flexibility into Plans

The publication for the Army's command and control (C2) doctrine, FM 6-0, discusses many of the same leadership behaviors that are noted in the leadership and operations FMs, such as delegating authority to subordinates and encouraging initiative at the lowest possible level so that subordinates' actions are in accordance with the commander's intent (Department of the Army, 2003a). Additionally, the FM explains that C2 is needed to deal with the uncertainty that is inherent in military operations.

> *Each military operation is a complex activity composed of smaller operations, each involving many individuals and systems acting simultaneously in complex environments. Factors such as the urban environment, restrictive rules of engagement, and political considerations produce unanticipated and unintended consequences that result in additional uncertainty* (Department of the Army, 2003a, pg. 1-10).

The FM characterizes control during operations as an open system such that the behavior of the force is affected by unpredictable and random interactions with organizations, people, and the environment. These interactions can have nonlinear effects on military organizations such that extremely small influences result in large, unpredictable outcomes. The FM asserts that junior leaders can cope with uncertainty and unpredictability by exercising their subordinates' initiative and incorporating flexibility and adaptability into their plans. That is, by delegating authority for decision-making to subordinates who can acquire and process critical information adequately,

[7] "Agility is the ability to move and adjust quickly and easily...Tactical agility is the ability of a friendly force to react faster than the enemy. It is essential to seizing, retaining, and exploiting the initiative" (Department of the Army, 2001b, p. 4-16).

junior leaders develop subordinates who can react quickly and effectively to changing situations and provide important information to their leaders. Further, when the plan changes during execution, control provides commanders with the flexibility to modify their actions in a timely manner (e.g., change operations or task organization).

Similarly, MCDP 1 describes the uncertain and unpredictable nature of war and emphasized that all actions in war are based on incomplete, inaccurate, or contradictory information (Department of the Navy, 1997). *Nonlinearity* is identified as an important source of uncertainty and is defined as "systems in which causes and effects are disproportionate. Minor incidents or actions can have decisive effects. Outcomes of battles can hinge on the actions of a few individuals" (Department of the Navy, 1997, p. 8). As uncertainty cannot be eliminated, MCDP 1 directs Marines to learn to fight under these conditions "by developing simple, flexible plans; planning for likely contingencies; developing standing operating procedures; and fostering initiative among subordinates" (Department of the Navy, 1997, p. 8).

Use Intuitive Decision-making Approaches in Addition to the Analytic Military Decision-making Process (MDMP)

TRADOC Pamphlet 525-5, Force XXI Operations, stresses that:

> *regardless of rank, all future force leaders will be called upon to make rapid, doctrinally sound decisions as they plan and execute missions in more diverse, high pressure operational environments. Tactical-level leaders, for example, must be prepared to make decisions, such as those involving rules of engagement and others that may have strategic consequences, under the scrutiny of the international media* (Department of the Army, 1994, p. 4-4).

Although the MDMP is one doctrinal procedure for exercising C2, FM 6-0 encourages leaders to employ a more intuitive approach when acting in response to unanticipated opportunities or threats, especially in time-constrained conditions (Department of the Army, 2003a).[8] Specifically, the MDMP is an analytic approach that directs leaders to generate several alternative solutions, compare these solutions to a set of criteria, and select the best course of action. On the other hand, "intuitive decision making is the act of reaching a conclusion which emphasizes pattern recognition based on knowledge, judgment, experience, education, intelligence, boldness, perception, and character. This approach focuses on assessment of the situation vice comparison of multiple options" (Department of the Army, 2003a, pg. 2-4). FM 6-0 directs commanders to employ intuitive decision making to rapidly dismiss impractical solutions and obtain a satisfactory solution when time is short or speed of decision is important. The FM asserts that the commander's speed and accuracy in addressing changing situations is a key contributor to agility. By emphasizing experienced judgment and intuition over deliberate analysis, the FM explains that commanders can increase the tempo of their actions and develop the necessary flexibility for adequately managing the uncertainty following their decisions. However, the FM suggests that commanders need to employ a decision-making technique based on the situation. A more analytic technique should be used when time and information is

[8] A complete review of the MDMP is beyond the scope of this report. The reader is directed to FM 5-0 (Department of the Army, 2005b), which discusses the MDMP in complete detail.

available or when the staff is inexperienced. In addition, FM 7-0, *Training the Force*, notes that the ability to make quick decisions comes from the knowledge of tactics and platoon and squad techniques and procedures (Department of the Army, 2002b).

In summary, Army doctrine has directed leaders to exhibit behaviors that reflect adaptive performance such as adopting a systems perspective, dealing with uncertain and unpredictable conditions, and practicing intuitive decision-making and creative thinking. Army doctrine also has tasked its training programs to develop leaders who are agile, flexible, self-aware, innovative, and passionate learners. Effective Army leaders also must be able to communicate their intent and develop initiative in their subordinates by delegating decision-making responsibilities down to the lowest level.

A Multidimensional Model of Adaptive Performance

To better understand and enhance adaptability in the workplace, some researchers have asserted that Campbell, McCloy, Oppler, and Sager's (1993) eight-factor theory of performance and Borman and Motowidlo's (1993) model of contextual and task performance be expanded to include a dimension of how well individuals adapt to new conditions and job requirements (Hesketh & Neal, 1999; Pulakos et al., 2000). For example, Pulakos et al. examined the adaptive performance requirements across a range of jobs, occupations, and task demands and found support for an eight-dimension model of adaptive performance:[9]

- *Handling Emergencies or Crisis Situations* (e.g., "reacting with appropriate urgency in life threatening situations"),
- *Handling Work Stress* (e.g., "remaining composed and cool when faced with difficult circumstances"),
- *Solving Problems Creatively* (e.g., "thinking outside the given parameters to see if there is a more effective approach"),
- *Dealing with Uncertain and Unpredictable Work Situations* (e.g., "effectively adjusting plans, goals, actions, or priorities to deal with changing situations"),
- *Learning Work Tasks, Technologies, and Procedures* (e.g., "quickly and proficiently learning new methods or how to perform previously unlearned tasks" and "doing what is necessary to keep knowledge and skills current"),
- *Demonstrating Interpersonal Adaptability* (e.g., "being flexible and open-minded when dealing with others"),
- *Demonstrating Cultural Adaptability* (e.g., "willingly adjusting behavior or appearance as necessary to comply with or show respect for others' values and customs"),
- *Demonstrating Physically Oriented Adaptability* (e.g., "frequently pushing self physically to complete strenuous or demanding tasks"; Pulakos et al., 2000, p. 617).

[9] Pulakos et al. (2000) analyzed a total of 9,462 critical incidents from a variety of jobs (21 jobs including 14 different types of military jobs) and identified 1,311 that required adaptation. For the Army jobs, they identified 452 incidents that required adaptation.

Empirical evidence for this taxonomy was provided by ratings from personnel representing a wide range of professions (N = 3,422) including 374 Army personnel. Of these, 99 were combat NCOs, 108 were combat support NCOs, 17 were SF, and 20 were commissioned officers. Although the researchers found support for their multidimensional model of adaptive performance, they noted that the number and type of adaptive behaviors varied across the jobs included in the study. They concluded that certain jobs might require greater amounts or different types of adaptive behavior than others.

White et al. (2005) drew from the work of Pulakos et al. (2000) and developed an adaptive performance training program for SF officers. Because Army leaders also must develop adaptability in their teams, White et al. added a *Leads an Adaptable Team* dimension to the model (e.g., "provides opportunities for subordinates to gain experience in new areas," "encourages shared understandings of situations among team members;" p. C-3). White et al. slightly modified Pulakos et al.'s definitions for the SF context. These definitions were used to categorize the behaviors for this research.

Training Adaptive Performance

Although adaptability has been identified as a critical dimension of job performance for leaders, "the understanding of how to train, develop, and enhance individual and team adaptability is in its infancy" (Kozlowski, 1998, p.120). Most current Army training programs for junior leaders do not have methods for fully developing and maximizing adaptive capabilities (Mueller-Hanson, White, Dorsey, & Pulakos, 2005; Tillson et al., 2005). In fact, an assessment of officer training concluded that current "Army training and leader development programs do not develop self-aware and adaptive leaders" and called for the officer education system to address these qualities (Department of the Army, 2001a, p. OS-17).

One notable exception is the training program that was created by White et al. (2005) for SF officers. Their program develops adaptive proficiency by providing officers with tools and strategies for performing effectively in dynamic environments. White et al. drew from the work of Pulakos et al. (2005) and focused on developing the officers' mental, interpersonal and physical adaptability as well as their ability to lead an adaptable team. White et al. conducted the training through a combination of exercises such that some exercises were designed to allow the students to uncover key principles for themselves (i.e., discovery learning). Smith, Ford, and Kozlowski (1997) suggested that individuals, who engage in discovery, or exploratory learning, employ a greater range of strategies, which, in turn, may become integrated with their existing knowledge and available for use in new situations. White et al. also included some structured exercises in the training so that the students received performance feedback.

The following section discusses several principles that have been identified as important factors when training adaptive performance: building domain knowledge, providing repetitive and sequenced exposure to new situations, developing decision-making skills, and creating the right climate.

Building Domain Knowledge

To solve problems in naturalistic problem domains, individuals must possess both a deep comprehension of the knowledge domain and the ability to recognize changes in the situation (Kozlowski, 1998).[10] Individuals who possess the requisite knowledge but do not have the ability to recognize the need to shift task priorities and modify their actions may incorrectly characterize novel situations as routine ones and apply inappropriate strategies leading to negative outcomes (Kozlowski, 1998). Adaptive experts have a deep understanding of the task, possess the ability to recognize changed situations, and can either apply the appropriate learned procedure or create a new more appropriate one (Smith et al., 1997).

It is also important to note that although other individual characteristics have been identified as predictors of adaptive performance (e.g., openness to experience, self-efficacy, resiliency, intelligence), they reflect stable attributes, which are difficult to change and less amenable to training (Mueller-Hanson et al., 2005). On the other hand, domain-specific knowledge and varied adaptive experience are entirely dependent on training (Mueller-Hanson et al., 2005). To develop this type of adaptive expertise, individuals must first build a foundation of knowledge and understand why procedures are appropriate for certain conditions and then learn to generalize and adapt this knowledge to a range of situations (Kozlowski, 1998; Smith et al., 1997).

Providing Repetitive Exposure to New Situations

Once the foundation of knowledge exists, the training must challenge individuals and provide guided experience by exposing them to new and challenging situations across a variety of training experiences and environments (Kozlowski, 1998). Repeated exposure to situations requiring adaptability allows the leader to build a "catalog of experiences" to draw from when determining an effective response to a new situation and speeds the acquisition of expertise (Mueller-Hanson et al., 2005, p. 9).

Tillson et al. (2005) conducted a thorough investigation of the types of training that are needed to prepare individuals and leaders to defeat nontraditional, asymmetric, and irregular threats. They noted the importance of repetition, feedback, and variation in training adaptability and emphasized that the tasks and conditions of the training events should shift frequently so the learner is never allowed to become comfortable in any given set of tasks. Tillson et al. reported the work of Morrison and Fletcher (2002) who suggested that in order to prepare military personnel for the unexpected the training must produce individuals who can rapidly construct views of reality and can recognize and respond to unexpected challenges.

[10] "Naturalistic problem domains are dynamic, ambiguous, and emergent; they cannot be completely defined in advance; and they shift dramatically and unexpectedly...often there are significant time pressures and high costs for mistakes" (Kozlowski, 1998, p. 116 & 119).

Army doctrine, FM 7-0 *Training the Force*, also emphasizes the importance of providing junior leaders with experience to develop adaptability:

> *Commanders train and develop adaptive leaders and units, and prepare their subordinates to operate in positions of increased responsibility. Repetitive, standards-based training provides relevant experience. Commanders intensify training experiences by varying training conditions. Training experiences coupled with timely feedback builds competence...Competence, confidence, and discipline promote initiative and enable leaders to adapt to changing situations and conditions.* (Department of the Army, 2002b, p. 2-7)

Further, FM 6-0 explains that repetitive, challenging training not only allows commanders to enhance their tactical skills but also gives them experience developing, articulating, and disseminating their commander's intent (Department of the Army, 2003a). FM 7-1, *Battle Focused Training*, stresses these same points and adds that repetitive training enhances the understanding, application, and execution of tactical doctrine (Department of the Army, 2003b). FM 7-1 asserts that doctrine is the foundation for the training from which leaders gain the necessary experience to develop adaptive capabilities.

A key issue in enhancing adaptive capabilities is the sequencing of exposure to variability and novelty. Individuals must first become experts in normative situations (i.e., develop routine expertise) and then be challenged by different training experiences and environments (Koslowski, 1998). FM 7-1 instructs commanders to expose leaders to the uncertainty inherent in full spectrum operations and provide them with battle command experience by providing realistic, combat-oriented training and by varying the events and exercise scenarios (Department of the Army, 2003b). By making the training events increasingly difficult and unpredictable, commanders provide a foundation that leaders can draw from to adapt to new situations. The FM also encourages commanders to develop junior leaders' understanding of commander's intent and the importance of a decentralized decision-making and execution approach.

Developing Decision-Making Skills

General Krulak (as cited in Adkinson, 2000) asserted that because those with the least skill in decision making will face the most demanding decisions on the battlefield, intuitive decision making is a vitally important combat skill. He posited that this skill is dependent upon experience and should be made instinctive through repetition. Adkinson added that because MOOTW environments require autonomous action by the smallest units, the individual rifleman must receive the same training as higher leadership because he may make the critical decision that determines operational or strategic success.

Roper and Vandergriff (2003) defined adaptability as an "experienced-based skill enhanced by critical and creative learning" and developed a program that requires students to make decisions and solve problems in a variety of training scenarios simulating different operational contexts (p. 22). They posited that the training program's focus is on developing decision-making skills for uncertain, fluid, and time-sensitive tactical situations. In a similar vein, Leonard et al. (2006) suggested that Army schools foster recognitional decision making by

developing educational models that require students to identify key aspects of ambiguous and uncertain situations, compare them with past experience, conduct mental simulations of alternative actions, and assess possible outcomes.[11] In addition, the training should review the logic and method of recognitional decision making, provide examples of how decisions are made in high stress situations, and utilize scenarios, vignettes, and simulations to reinforce the skills (Leonard et al., 2006).

Computerized simulations aimed at enhancing leadership decision-making skills also could be used to train adaptive capabilities, especially mental adaptability skills. For example, the Army Command and General Staff College uses computerized scenarios to enhance battlefield decision-making processes such as analyzing the essential elements of complex, uncertain, and dynamic environments, incorporating those elements into plans, and taking action in a timely and decisive manner (Cohen, Thompson, Adelman, Bresnick, Shastri, & Riedel, 2000). Similarly, Lussier and Shadrick (2003) developed a computer simulation that provides Army officers with opportunities to practice thinking like the enemy, seeing the battlefield from a larger perspective, and visualizing dynamic environments. A simulation also was included as part of SF adaptability training to promote creative problem-solving skills (Raybourn, Heneghan, Deagle, & Mendini, 2005). Finally, Tillson et al. (2005) discussed the possibility of creating a simulation that would develop adaptability by providing leaders with opportunities to practice national security decision making and receive performance feedback.

Providing Feedback

Tillson et al. (2005) stressed the importance of feedback when developing adaptability. In particular, they noted that the focus of the feedback (i.e., After Action Reviews) must address adaptability, innovation, and outcomes rather than performance to standard. They also suggested that coaches and mentors should focus more on the thinking process that led to the decision rather than on the correctness of the decision. Mueller-Hanson et al. (2005) recommended that the instructors be trained on adaptive responding to adequately provide performance feedback.

White et al. (2005) followed the recommendations of earlier researchers (e.g., Kozlowski, 1998; Ross & Lussier, 1999) to incorporate feedback into the design of the SF training. The program included several highly structured practice sessions in which students received coaching and were provided feedback on their results. For example, to develop interpersonal and team-based adaptability, students engaged in scenario-based exercises in which they practiced and received feedback on their negotiation and leadership skills. Mueller-Hanson et al. (2005) asserted that an iterative process of practice, feedback, and practice is vital to develop adaptive performance and that feedback from multiple sources may help leaders increase awareness of their strengths and weaknesses.

Creating the Right Climate

Dorsey, Mueller-Hanson, and Pulakos (2006) discussed that behaviors associated with leading an adaptable team can be characterized as either those that develop the adaptive

[11] Leonard et al. (2006) use the term recognitional decision making synonymously with naturalistic decision-making.

capabilities of others or that create a climate that fosters adaptability. To develop adaptability, they suggested that leaders set expectations for adaptive performance, provide performance opportunities, and provide feedback to reinforce effective behaviors. Similarly, Koslowski (1998) recommended that initial training in the classroom focus on developing knowledge, learning strategies, and self-regulatory skills. Then, simulation or practice-based training should reinforce prior learning, proceduralize self-regulatory skills, and develop awareness of teamwork requirements.

To create a climate that enables adaptability, Dorsey et al. (2006) suggested that leaders set flexible goals, establish rules and norms that encourage creative thinking, develop reward systems that reinforce adaptive performance, and allow subordinates to voice opinions and participate in activities that affect the team, such as planning. In a similar vein, shared mental model theory suggests that team members draw on a common understanding of the task and adjust their behavior accordingly when communication is reduced (Cannon-Bowers & Salas, 1998). Thus, training that fosters the development of accurate mental models may improve adaptive team performance.

Army doctrine also requires leaders to take an active role in developing their subordinates. Specifically, FM 7-0 instructs leaders to empower subordinates to make "independent, situational-based decisions on the battlefield" (Department of the Army, 2002b, p. 2-12). In addition, FM 7-1 states, "Commanders train and develop adaptive leaders and units, and prepare subordinates to operate in positions of increased responsibility" (Department of the Army, 2003b, p. 4-30). FM 7-1 also encourages commanders to create a climate that rewards subordinates who are bold and innovative, while offering support for honest mistakes (Department of the Army, 2003b).

Additional Factors

Finally, FM 7-1 suggests several factors that should be considered when creating training programs to develop an agile and adaptive mindset and the cognitive abilities necessary to rapidly synthesize information, make intuitive assessments of situations, and rapidly conceptualize friendly COAs (Department of the Army, 2003b). First, training programs should allow leaders to fight realistically in the training environment by utilizing challenging scenarios, supported by training aids, devices, simulators, and simulations. Second, programs should train combined arms at the lowest level and incorporate a strategic level focus earlier. Third, fewer training events with more complexity should be conducted.[12] Fourth, junior leaders should be empowered to plan and conduct training, which will foster creative solutions and ideas. Fifth, "leaders should add uncertainty and friction throughout all training events. The essence of leader success is being able to identify and adjust to completely new conditions rapidly, and to accomplish the mission with minimum disruption in the operation" (Department of the Army, 2003b, p. A-3). Finally, training programs should include a process of assessment reinforced with feedback to enhance self-awareness, adaptability, and leader skills related to building morale, teamwork, and cohesion.

[12] This approach contradicts the recommendations of Roper and Vandergriff (2003) and warrants additional study.

Present Research

Although there is much anecdotal evidence to support the need for junior Army leaders to possess a high level of adaptive capabilities, a goal of the present research was to better define the behaviors that are associated with adaptive performance. Specifically, by applying a nine-dimension model of adaptive performance (Pulakos et al., 2000; White et al., 2005) to leader behaviors performed in operational and training contexts, we determined whether the model is appropriate to describe the behaviors in these settings. Although Pulakos et al.'s findings included the adaptive capabilities that may be the most critical for Infantry NCOs, it is important to determine whether these capabilities have changed due to recent combat experiences.

Since previous empirical work on Pulakos et al.'s (2000) model focused primarily on lower-level, non-managerial jobs, there is a need to further investigate the dimensionality of adaptive performance for leaders of organizations as their job requirements may differ substantially from those of non-managerial positions. Thus, a second goal of the present research was to determine whether the model sufficiently addressed all of the adaptive behaviors of higher-level, leadership positions. A final goal of the present research was to investigate the training methods that may aid in maximizing adaptive performance.

In order to accomplish these goals, we examined interview data from two different archival datasets from research conducted by the U.S. Army Research Institute (ARI). Both research projects collected critical incidents of adaptive performance from U.S. Army officers and NCOs. In the Combat Veterans Project, the participants were asked to describe situations in which they responded adaptively in operational contexts (i.e., combat tours). In the Joint Readiness Training Center (JRTC) Project, the participants were asked to describe situations in which they performed adaptively or observed adaptive responding in training contexts. The participants also were asked to describe how they prepared themselves for situations requiring an adaptive response and to describe the training methods they thought would promote leader adaptability.

Method

Participants. Twenty NCOs and 20 commissioned officers in the U.S. Army generated critical incidents from their combat tours in Iraq and Afghanistan in which either they or their unit responded adaptively (see Goodwin, Dyer, & Centric, 2006 for a full discussion of the purpose of the larger research project). For the NCOs, 10 individuals were interviewed from the Basic Noncommissioned Officer Course (BNCOC) and 10 individuals were interviewed from the Advanced Noncommissioned Officer Course (ANCOC). All of the participants were Infantry NCOs; 15% were Sergeant Promotables, 75% were Staff Sergeants, and 10% were Sergeants First Class. The NCOs had served an average of 9.22 years (SD = 2.31) in the Army. Most of the ANCOC and BNCOC NCOs had been deployed to Iraq, 90% and 80%, respectively, while the remaining had deployed to Afghanistan. The average length of deployment was one year. The majority of the NCOs reported that they were in leadership positions while deployed: Squad Leader (ANCOC 90%; BNCOC 80%); Team Leader (ANCOC 10%; BNCOC 30%); and Platoon Sergeant (ANCOC 20%).

For the officers, 20 individuals were interviewed from the Infantry Captains Career Course (ICCC). Most of the participants were Infantry officers (95%) and were Captains (95%). They had served an average of 6.44 years (SD = 3.42) in the Army. Sixty-five percent of the officers had deployed to Iraq while 35% had deployed to Afghanistan. The average length of deployment for the officers was nine months. The majority of the officers served as Platoon Leaders while deployed (70%); the remaining served as Executive Officers (30%).

Because Soldiers may experience situations differently depending on their rank and duty positions, the results are presented separately for the officers, who have experience leading at the platoon level, and the NCOs, who have experience leading at the squad level. Although the NCO participants were attending two different courses that are developmental in nature, the majority of the NCOs had served as Squad Leaders while deployed. Thus, it was determined that, for the purposes of this report, they had acquired similar levels of leadership experience at the squad level, and the results are presented with these NCO course samples combined.

Procedure and analyses. As part of the larger research project (see Goodwin et al., 2006), the participants were asked to describe situations in which they and their unit responded adaptively (see Appendix A for these two interview questions). After analyzing the data, the coders agreed that the leaders did not distinguish behaviors performed by their units from the behaviors that they performed individually. As leaders, they directed their units' responses; therefore, when the participants described their units' responses they also referenced their own behavior. Further, the results revealed that similar dimensions were reported with similar frequencies for these two questions. Thus, the responses to these two questions were combined when reporting the results.

Two of the authors of the present research, an industrial-organizational psychologist and a Major in the U.S. Marine Corps Reserve, coded the incidents according to the nine adaptability dimensions. The initial inter-rater percentages of agreement are reported for each research project. Differences in judgments were subsequently discussed to consensus. If this discussion

was of a substantive nature and led to a better understanding of the categories, especially in terms of the military context, then a more complete description of the deliberative process is provided.

The participants also were asked how they or their unit would prepare for situations requiring a high level of adaptive responding. While the questions differentiated between leader and unit preparation, the answers did not consistently reflect that distinction. Therefore, the responses to these two questions were combined when reporting the results. Since a wide range of suggested training approaches was expected, an initial inter-rater percent agreement was not obtained for these responses. However, the coders agreed on the final training categories.

Results and Discussion

Officers – incidents of adaptive performance. Sixty-one incidents were reviewed. Of these, 54 incidents were judged to require some type of adaptation and, as shown in Table 1, were coded into eight dimensions reflecting adaptive performance. For the remaining seven incidents, the officers either did not provide enough detail to code the responses or discussed troop leading behaviors expected of those positions (e.g., maintaining an appropriate level of physical fitness, working autonomously). The initial inter-rater percent agreement was 56%. The high degree of conceptual overlap among the dimensions contributed to the lack of agreement. For example, interpersonal skills, such as negotiating, communicating, and bargaining, were employed by leaders when interacting with the local populace. These incidents were coded as either *Interpersonal* or *Cultural adaptability* depending on the situation. Further, responses to single traumatic events were coded as *Handles Emergencies* while general mental or emotional states were coded as *Handles Work Stress*. Finally, incidents were coded as *Learns Work Tasks* if the leaders performed these behaviors in preparation for future events or as part of developmental processes; solutions developed in response to changing situations (i.e., in the process of completing a mission) were coded as *Solves Problems Creatively*.

The coders agreed that the nine-dimension model accounted for all of the adaptive capabilities such that no additional adaptive performance dimensions were suggested by the incidents. However, not all of the dimensions were represented, since the *Demonstrates Physically Oriented Adaptability* dimension was not used. Table 1 shows that the officers generated critical incidents reflecting the *Deals with Unpredictability* dimension almost three times more than any of the other dimensions, which accounted for 41% of the total responses. Interestingly, Pulakos et al.'s results indicated that this dimension received the second highest composite index (combined importance and time spent ratings) across a wide range of jobs. For the present research, the leader behaviors included in this category reflected performing different roles while leading units, especially when the focus of a mission changed from combat to stability and support operations. Specifically, the officers discussed how they and their team members switched mindsets from fighting with hostile individuals to dealing with non-hostile civilians needing medical attention or assistance meeting other basic needs. The officers noted that many individuals performed duties that were outside their combat specialties (e.g., combat engineers performing civil engineering work). They also discussed altering their plans, actions, and timelines in response to changing situations in order to accomplish the mission.

Table 1

Dimensions of Adaptive Performance for Officers

Adaptability Dimensions	Frequency (Percent) of Incidents ($N = 54$)	Summary of Behaviors
Deals with Uncertain and Unpredictable Work Situations	22 (41)	Changes roles, responsibilities, plans and actions (e.g., engages in stability and support operations to combat and vice versa); alters timelines
Handles Emergencies or Crisis Situations	8 (15)	Deals with casualties; makes decisions and performs effectively in life-threatening situations
Solves Problems Creatively	8 (15)	Uses equipment in unique ways (outside of doctrine); positions forces strategically; synthesizes multiple sources of information and different perspectives; generates multiple alternatives for accomplishing the same mission
Learns Work Tasks, Technologies, and Procedures	5 (9)	Learns capabilities and functions of new equipment; learns how to enhance capabilities of existing equipment and procedures; learns how to apply current knowledge and skills to new areas of work (e.g., applies combat engineering knowledge to civil engineering projects); learns how to perform additional leadership responsibilities
Handles Work Stress	4 (7)	Maintains emotional control; effectively controls civilians and crowds; communicates changes in plans, timelines, etc. to Soldiers
Demonstrates Cultural Adaptability	3 (6)	Understands different cultures (e.g., customs; greetings; concept of honor; tribal affiliations; history); forms relationships with local leaders
Demonstrates Interpersonal Adaptability	3 (6)	Communicates and negotiates with diverse groups to accomplish the mission; inquires about Soldiers' welfare and takes action to help Soldiers
Leads an Adaptable Team	1 (2)	Allows subordinates to make decisions and learn from their mistakes

Table 1 also shows that the officers generated incidents that reflected the *Handles Emergencies* and the *Solves Problems Creatively* dimensions. Each dimension accounted for 15% of the total responses. For *Handles Emergencies*, the officers discussed performing in life-threatening or highly stressful situations which typically involved taking care of casualties. For *Solves Problems Creatively*, the responses reflected using equipment and forces in unique ways to accomplish the (often) non-doctrinal mission. Successful mission accomplishment often involved analyzing the situation from multiple perspectives to develop the most effective COA. Additionally, 9% of the incidents tapped the *Learns Work Tasks* dimension (Table 1). The officers noted that they continually learned the capabilities of equipment assets during operations and had to learn how to perform additional duties to accomplish the mission. Finally, Table 1 shows that the remaining 30% of the incidents tapped all of the other dimensions except for the *Demonstrates Physically Oriented Adaptability* dimension.

Officers – training for adaptive capabilities. Interestingly, the officers identified methods that either they or their units currently used to prepare for situations requiring a high level of adaptive responding (or would like to see implemented in training) that reflected the adaptability dimensions. Table 2 shows the summary of behaviors and methods that were discussed by the officers and how these were associated with the adaptability dimensions. The largest percentage of the responses related to the *Deals with Unpredictability* dimension, which parallels the officer's reports that this was a high adaptive requirement of their jobs. Specifically, the officers suggested that approaches, which train leaders and units to perform effectively when the goals or conditions of the mission change, require leaders to plan for contingencies, and teach them to rely on their subordinates for information, may help leaders and units to better adapt to rapidly changing situations. Contingency planning was coded as an approach for dealing effectively with changing situations because the officers noted the importance of thinking through alternative scenarios that could occur along a predetermined route prior to the mission, such as enemy contact and interactions with civilians. On the other hand, the officers' responses related to wargaming or the process of developing different courses of action for a particular mission, thinking of the different outcomes for particular actions, and thinking of the mission from different perspectives (e.g., the enemy) were coded as approaches for training leaders how to solve problems creatively. There is considerable conceptual overlap between these two approaches, thus it is likely that training methods focused on these activities will develop skills related to both of these adaptability dimensions.

Table 2

Training for Adaptive Capabilities – Officer Responses

Adaptive Performance Dimensions	Frequency (Percent) of Incidents ($N = 44$)	Summary of Training Behaviors and Methods
Deals with Uncertain and Unpredictable Work Situations	10 (23)	Train leaders to perform effectively when the goals of the mission change; train unit to perform effectively with changing roles, responsibilities, plans and actions (e.g., engage in stability and support operations to combat and vice versa); train unit to perform effectively when the conditions of the mission change (e.g., timeline, location, civilians on the battlefield); require leaders to perform in different situations and demonstrate making good decisions; plan for contingencies; rely on leaders for information on changing situations
Leads an Adaptable Team	8 (18)	Train subordinates to perform higher-level leadership duties - man-down drills, delegate leadership responsibilities down to the lowest level; keep subordinates informed as much as possible (provide enough information so that they understand the mission); practice making leadership decisions in realistic situations; allow leaders to make decisions independently but provide feedback on possible outcomes of decisions
Handles Emergencies or Crisis Situations	7 (16)	Train leaders to show restraint and composure (e.g., assess the situation first and then make a decision) in complex difficult situations (e.g., stability and support operations to combat and vice versa; crowds); train Soldiers to treat the local populace with respect and show concern for them; practice casualty evacuations
Demonstrates Cultural Adaptability	6 (14)	Provide cultural awareness training to unit; learn local language
Solves Problems Creatively	5 (11)	Allow subordinates flexibility in equipment/gear placement; train unit to work with local security forces to address problems; practice thinking outside the box; consider different perspectives and outcomes of decisions (wargames)
Learns Work Tasks, Technologies, and Procedures	5 (11)	Learn new tactics, techniques, and procedures (TTP) that are effective for the situation
Demonstrates Interpersonal Adaptability	2 (5)	Train the unit to negotiate with the local leaders
Handles Work Stress	1 (2)	Train leaders to deal with Soldiers' emotions during difficult situations

Interestingly, although only one combat incident was generated regarding the *Leads an Adaptable Team* dimension (Table 1), 18% of the training responses were related to this dimension. Specifically, the officers indicated that, in order to prepare themselves or their units to be adaptable, leaders should train subordinates to perform higher-level leadership duties such as man-down drills, keep subordinates informed as much as possible (provide enough information so that they understand the mission), practice making leadership decisions in realistic situations, and allow subordinate leaders to make decisions independently with appropriate feedback on possible outcomes of decisions.[13] Additionally, the officers noted several approaches relating to *Handles Emergences or Crisis Situations* such as training leaders to maintain their composure during difficult situations and training Soldiers to show concern for the local populace. The officers also suggested that cultural awareness and language training would increase skills related to cultural adaptability. Finally, the officers reported several other training methods that were related to the remaining adaptability dimensions except *Demonstrates Physically Oriented Adaptability*.

The officers also identified several techniques that may be effective in training adaptability in general. Specifically, the officers provided 22 responses that were categorized into two different categories: *Domain Knowledge* and *Experience* (Table 3). Conceptually, these two concepts are very distinct. Domain knowledge refers to a meaningful organization of information required to perform in a specific area. Experience, on the other hand, is a vehicle that serves to process knowledge and practice skills. For example, many of the methods that were categorized as *Domain Knowledge* called for Soldiers and leaders to become proficient in Infantry tasks and related concepts (e.g., battle drills, close quarter marksmanship, rules of engagement, stability and support operations, enemy prisoner of war (EPW) handling, and crowd control). The officers also expressed the need to practice battle tasks in different situations and incorporate realistic elements in the situations, such as members of the opposing force (OPFOR; i.e., the enemy) and civilians on the battlefield. These techniques were coded as *Experience* because they allow units to practice making complex decisions such as whether or not to shoot. Although conceptually distinct, operationally, examples that refer to developing skills through experience also builds domain knowledge.

[13] Man-down drills involve removing ("killing") a key leader from the training, which requires subordinates to assume the leadership role.

Table 3

General Methods for Training Adaptive Capabilities – Officer Responses

Training Areas	Frequency (Percent) of Incidents ($N = 22$)	Summary of Behaviors and Methods
Domain Knowledge	13 (59)	Become proficient in Infantry tasks and related concepts (e.g., battle drills, close quarter marksmanship, rules of engagement, stability and support operations, enemy prisoner of war (EPW) handling, crowd control); learn from the experiences of others; learn capabilities of new equipment; learn capabilities of support units (e.g., civil affairs units); establish standard operating procedures and tactics, techniques, and procedures (TTP); help Soldiers understand their roles within the battle drills or tasks
Experience	9 (41)	Include OPFOR in training scenarios for realism; role-play as OPFOR to gain a different perspective; practice battle tasks in different situations; practice operating as a squad; incorporate civilians on the battlefield in realistic situations, perform shoot-don't shoot drills; observe both correct and incorrect ways of performing tasks to learn from others

NCOs – incidents of adaptive performance. A total of 58 incidents were reviewed. Of these, 48 incidents were judged to require some type of adaptation and, as shown in Table 4, were categorized into all nine of the dimensions reflecting adaptive performance. For the remaining 10 incidents, the NCOs did not provide enough information for the incidents to be coded. The initial inter-rater percent agreement was 53%. The high degree of conceptual overlap among the dimensions also contributed to the lack of agreement. In addition, because some of the dimensions are reflective of motivational and affective attributes (i.e., *Handles Work Stress* and *Handles Emergencies*), it was necessary for the coders to distinguish these types of adaptive responses from those which were typical behaviors of Infantry leaders or reflected *Deals with Unpredictability*. For example, although performing actions to control crowds could be coded as *Handles Emergencies*, the coders determined that these incidents typically reflected a change in the situation that was unpredictable but not necessarily life-threatening. If, however, the unit came under fire during these situations, then the incidents were coded as *Handles Emergencies*.

The coders agreed that the nine-dimension model accounted for all of the adaptive capabilities such that no additional adaptive dimensions were suggested by the incidents. Table 4 shows that 25% of the incidents generated by the NCOs reflected the *Handles Emergencies and Crisis Situations* dimension. Similar behaviors were reported as the officers for this category such as making decisions in life-threatening and highly stressful situations, which typically involved dealing with casualties. Similar to the officer results, a larger number of the incidents reflected the *Deals with Unpredictability* dimension and described the challenges of adapting to changing roles and responsibilities due to the shifting focus from combat to stability and support operations. The NCOs expressed difficulty in shifting mindsets from dealing with hostile combatants to handling non-hostile civilians in a very short period of time. They discussed performing additional duties, such as providing police, construction, and civil affairs support, and noted the need to change plans in response to guidance from higher echelons.

Similar to the officers' responses, several of the NCOs' incidents related to the *Learns Work Tasks* and *Solves Problems Creatively* dimensions (13% each of the total number of incidents). For *Learns Work Tasks*, the NCOs reported many of the same behaviors as the officers such as learning how to enhance the capabilities of existing equipment and learning how to perform additional leadership responsibilities. The behaviors related to the *Solves Problems Creatively* dimension reflected developing new tactics, techniques, and procedures (TTP) that were outside of doctrine and emplacing forces in strategic positions to accomplish the mission. The other 28% of the incidents reflected the remaining adaptability dimensions including the physical adaptability dimension.

It is important to note that the NCO results differ somewhat from Pulakos et al.'s (2000) findings. Specifically, the three highest composite index ratings (combined importance and time spent ratings) for the Infantry NCOs in Pulakos et al.'s study reflected the following dimensions: 1) *Learns Work Tasks*; 2) *Handles Work Stress*; and 3) *Deals with Unpredictability*. For the present research, the top three dimensions generated by the Infantry NCOs were the following: 1) *Handles Emergencies*; 2) *Deals with Unpredictability*; and 3) *Learns Work Tasks/Solves Problems Creatively* dimensions. The results suggest that the NCOs for this sample performed behaviors related to handling emergencies and dealing with unpredictable situations more often compared to those who participated in Pulakos et al.'s study in 2000.

Table 4

Dimensions of Adaptive Performance for NCOs

Adaptability Dimensions	Frequency (Percent) of Incidents ($N = 48$)	Summary of Behaviors
Handles Emergencies or Crisis Situations	12 (25)	Deals with casualties; makes decisions and performs effectively in life-threatening situations
Deals with Uncertain and Unpredictable Work Situations	10 (21)	Changes roles, responsibilities, plans and actions (e.g., engages in stability and support operations to combat and vice versa); changes plans in response to guidance from higher echelons
Learns Work Tasks, Technologies, and Procedures	6 (13)	Learns from the experiences of others (i.e., incorporates "lessons learned" from units into procedures); learns capabilities and functions of new equipment; learns how to enhance capabilities of existing equipment and procedures; learns new techniques for performing job duties; learns how to perform additional leadership responsibilities
Solves Problems Creatively	6 (13)	Develops new TTP to accomplish the mission (outside of doctrine); emplaces forces in strategic positions
Handles Work Stress	5 (10)	Manages emotions and demonstrates resilience in difficult situations; effectively controls civilians and crowds; performs effectively with increased responsibilities and demanding workloads
Demonstrates Cultural Adaptability	3 (6)	Understands different cultures (e.g., customs; greetings; language); forms relationships with individuals in the local populace
Demonstrates Interpersonal Adaptability	3 (6)	Treats the local populace with respect and shows concern for them; changes behavior to work effectively with different units or individuals
Demonstrates Physically Oriented Adaptability	2 (4)	Accomplishes the mission and shows resiliency in situations that are extremely physically demanding
Leads an Adaptable Team	1 (2)	Involves team members in planning and decision-making processes

Although there were some differences in the number of incidents generated per category, the dimensions reported by both officers and NCOs were similar. For example, the majority of incidents generated by each sample were coded as the *Deals with Unpredictability* and *Handles Emergencies* dimensions. Many of the remaining incidents for both samples reflected the *Learns Work Tasks* and *Solves Problems Creatively* dimensions. The results suggest that individuals in both of these leadership positions may need to posses similar adaptive capabilities. However, as the rank order of these dimensions differed somewhat across the samples, the exact nature of adaptive responding that is required, especially in terms of critical behaviors that should be performed and the amount of time spent performing certain behaviors, may depend on the specific duty position.

NCOs - training for adaptive capabilities. The NCOs also identified methods that either they or their units currently used to prepare for situations requiring a high level of adaptive responding (or would like to be included in training) related to the adaptability dimensions. Table 5 summarizes the behaviors and methods that were discussed by the NCOs and how these were associated with the adaptability dimensions. The largest percentage of the responses related to the *Deals with Unpredictability*, *Solves Problems Creatively*, and *Leads an Adaptable Team* dimensions. The NCOs suggested similar behaviors and methods as the officers for preparing for or training these adaptive capabilities. For example, they suggested that leaders and units need to learn to perform different roles, deal with changing plans and unpredictable situations, and practice thinking outside the box. Similar to the officers, a larger percentage of the responses reflected the *Leads an Adaptable Team* dimension. The NCOs suggested that leaders should be trained to make decisions independently and should be allowed to make mistakes in training as long as they are provided with developmental feedback. They noted the importance of training scenarios that require leaders to make decisions in many different situations and which require them to react quickly to the enemy. Finally, some NCOs called for leaders to be open-minded and to listen to subordinates' ideas when making decisions.

Table 5

Training for Adaptive Capabilities – NCO Responses

Adaptive Performance Dimensions	Frequency (Percent) of Incidents ($N = 22$)	Summary of Training Behaviors and Methods
Deals with Uncertain and Unpredictable Work Situations	5 (23)	Learn to perform different roles and deal with changing plans, actions and responsibilities to accomplish the mission
Solves Problems Creatively	5 (23)	Practice thinking outside the box; be open-minded about how to accomplish the mission
Leads an Adaptable Team	5 (23)	Train leaders to make decisions independently; allow leaders to make mistakes in training and provide developmental feedback so that they can learn from their mistakes; train subordinates to react quickly to the enemy by being aware of their surroundings; require leaders to make decisions in many different training situations; train leaders to be open-minded and listen to subordinates' ideas when making decisions
Handles Work Stress	3 (14)	Train leaders to deal with Soldiers' emotions during difficult situations
Demonstrates Cultural Adaptability	2 (9)	Provide cultural awareness and language training to units
Demonstrates Interpersonal Adaptability	1 (5)	Train Soldiers to treat the local populace with respect and show concern for them
Learns Work Tasks, Technologies, and Procedures	1 (5)	Learn new TTP that are effective for the situation

The NCOs also identified several techniques that may be effective in training adaptability in general (Table 6). The responses reflected many of the same behaviors and methods as reported by the officers and were categorized into the same two dimensions as the officers' responses: *Domain Knowledge* and *Experience*. For example, the NCOs reported the importance of acquiring knowledge of Infantry tasks and related concepts and developing skills by rehearsing scenarios that occur in combat.

Table 6

General Methods for Training Adaptive Capabilities – NCO Responses

Training Areas	Frequency (Percent) of Incidents ($N = 21$)	Summary of Behaviors and Methods
Domain Knowledge	16 (76)	Receive proper training at home station; become proficient in battle drills, physical training, medical training, and marksmanship; learn from the experiences of others; become proficient in basic Soldiering; cross-train subordinates on Infantry tasks (e.g., combat life saver, vehicle driver); know the rules of engagement and how to do one's job
Experience	5 (24)	Replicate stability and support and combat stressors in training events; demonstrate teaching points to Soldiers by using scenarios; rehearse scenarios of events that occurred in combat

Method

Participants. Twenty-four U.S. Army trainers from JRTC generated the critical incidents of adaptability.[14] JRTC conducts full mission rehearsals for units. Twelve of the trainers were observer-controllers (OCs) and 12 were OPFOR. The OCs observe regular Army units and provide performance feedback while the OPFOR role-play the enemy to provide a realistic training experience for these units. All of the OCs were infantrymen; eight were officers and six were NCOs. They had observed an average of 9.75 training rotations (SD = 6.38) and had served an average of 10.79 years in the military (SD = 3.63) and 1.19 years as OCs (SD = .72). All of the OPFOR also were infantrymen; five were officers, four were NCOs, and three did not provide their rank. They had observed an average of 15.17 training rotations (SD = 14.36) and had served an average of 6.42 (SD = 3.84) years in the military and 1.81 years as members of the OPFOR (SD = 1.61).

Procedure and analyses. The participants were provided with definitions of adaptability similar to the descriptions of four of White et al.'s (2005) dimensions: *Handles Emergencies, Learns Work Tasks, Handles Work Stress,* and *Solves Problems Creatively*. Then, the OCs were asked to describe situations in which they observed junior leaders demonstrating good adaptive thinking while the OPFOR were asked to describe situations in which they demonstrated good leader adaptive thinking (see Appendix A for the interview questions). The same researchers, who coded the combat veterans' data, coded these data. Although only four adaptability dimensions were described to the participants, a review of the data suggested that the participants reported a wider range of adaptive responses. Thus, the coders used the nine-dimension model to categorize the responses.

The OPFOR also were asked how role-playing the enemy changed the way they thought as a small unit leader. Both the OCs and OPFOR were asked about the skill areas needed for adaptive performance and how adaptability should be trained. Since many respondents repeated answers across the training questions, the responses to these questions were combined when reporting the results. Since a wide range of suggested training approaches were expected, an initial inter-rater percent agreement was not obtained for these responses. However, the coders agreed on the final categorization of the responses into the model dimensions.

[14] Data were collected as part of an investigation examining factors relating to small unit leader adaptive thinking and decision-making.

Results and Discussion

OCs – incidents of adaptability. Fifty-nine incidents were reviewed. Of these, 31 were judged to require some type of adaptation and, as shown in Table 7, were categorized into five dimensions reflecting adaptive performance. For the remaining 28 incidents, the OCs either did not provide sufficient information to code the incidents or described behaviors reflecting antecedents of adaptability (see Table 8). The initial inter-rater percent agreement was 64%, and the same factors described previously contributed to the discrepancies. Additionally, some of the discrepancies were due to a deficiency in the definition of the *Leads an Adaptable Team* dimension as described by White et al. (2005). The military subject matter expert (SME) coder suggested that for military samples this dimension should include the delegation of leadership responsibilities to the lowest level. Thus, all incidents reflecting the delegation of responsibilities to subordinates and providing opportunities for subordinates to perform higher-level leadership duties were coded as *Leads an Adaptable Team.*

The coders agreed that the nine-dimension model accounted for all of the adaptive capabilities when the definition for the *Leads an Adaptable Team* dimension was modified to include the delegation of leadership responsibilities. No additional dimensions were suggested by the incidents. However, not all of Pulakos et al.'s (2000) dimensions were represented. Table 7 shows that 35% of the incidents generated by the OCs reflected the *Leads an Adaptable Team* dimension and included behaviors such as training all team members to make sound decisions quickly and independently and communicating commander's intent so that all team members understand the goals of the mission. Similar to the combat veterans, many of the incidents reflected the *Deals with Unpredictability* dimension (26%). Incidents of contingency planning prior to operations (e.g., "what if a vehicle breaks down," "what if we get rear ambushed") as well as incidents of leaders changing plans and acting quickly in response to new or additional information regarding the situation were coded as this dimension.

The OCs also generated incidents reflecting the *Solves Problems Creatively* (19%), *Handles Emergencies* (13%), and *Handles Work Stress* dimensions (6%) and reported similar behaviors as the combat veterans. On the other hand, the OCs did not generate incidents reflecting four of the model dimensions: *Learns Work Tasks* and *Demonstrates Interpersonal, Cultural,* and *Physically Oriented Adaptability*. Since the OCs were not provided with definitions of the *Interpersonal, Cultural* or *Physically Oriented Adaptability* dimensions, it is not surprising that they did not generate incidents reflecting these performance domains. Similarly, the breadth of the incidents also may have been limited by the wording of the interview question, such that the trainers were asked to provide *incidents of good adaptive thinking*. This may have caused the trainers to conceptualize adaptability as a mental construct rather than a social one, thereby reducing their tendency to generate incidents in the social and cultural domains. Further, the scope and content of the training exercises likely limited the range of adaptive behavior exhibited by leaders and observed by the OCs. For example, the training exercises are typically short in duration and cannot fully simulate the environmental or combat stresses that would elicit *Physically Oriented Adaptability*. Also, since the primary goal of JRTC is to rehearse previously learned tasks, it is unlikely that the leaders would have demonstrated behaviors related to learning new tasks or work processes.

Table 7

Dimensions of Adaptive Performance for the OCs

Adaptability Dimensions	Frequency (Percent) of Incidents ($N = 31$)	Summary of Behaviors
Leads an Adaptable Team	11 (35)	Involves team members in planning and decision-making processes; delegates leadership responsibilities down to the lowest levels (e.g., down to the riflemen); trains all team members to make sound decisions quickly and independently; communicates orders to all team members so that everyone understands the purpose and endstate of the mission, especially when plans change (communicates commander's intent)
Deals with Uncertain and Unpredictable Work Situations	8 (26)	Changes plans and actions in response to new or additional information regarding the situation; changes roles and responsibilities; plans for contingencies
Solves Problems Creatively	6 (19)	Considers many different outcomes and consequences of decisions; develops new TTP to accomplish the mission (outside of doctrine); uses technology in unique ways to communicate effectively
Handles Emergencies or Crisis Situations	4 (13)	Deals with casualties; makes effective decisions in dangerous situations that mitigate the harmful effects on civilians; considers all relevant information when making decisions in highly stressful situations; assumes leadership roles as needed during combat to accomplish the mission
Handles Work Stress	2 (6)	Manages emotions (e.g., maintains composure, remains calm) and stays focused on the mission (e.g., effectively prioritizes) when confronted with distractions and difficult situations; maintains command presence

OCs – antecedents of adaptability. The results also revealed that some of the responses (judged not to reflect adaptive performance) could be categorized as antecedents or predictors of adaptability (Table 8).[15] The coders identified 16 incidents that reflected the importance of acquiring *Domain Knowledge* and gaining Infantry-related skills through *Experience*. These responses suggested that experience is a method for building domain knowledge. Therefore, these incidents could not be separated into distinct categories. The initial agreement for this dimension was low, 31%, because this category was not determined a priori. That is, although the coders independently recorded responses reflecting this category as they reviewed the incidents, they had not discussed doing so beforehand. To develop Infantry skills, the OCs suggested conducting rehearsals to become proficient in Infantry and leadership tasks prior to the execution of the mission, learning from other Soldiers' experiences, and cross-training team members to perform other team member and leadership duties.

The OCs also described situations in which individuals assumed additional leadership responsibilities to accomplish the mission. The coders defined this attribute as *Initiative* and judged three incidents as reflecting this category.[16] Finally, each reviewer identified a separate incident reflecting *Situational Awareness* such that leaders must possess a keen understanding of their environment.

Table 8

Antecedents of Adaptability Reported by OCs

Antecedents	Frequency (Percent) of Incidents ($N = 21$)	Summary of Behaviors
Domain Knowledge/ Experience	16 (76)	Develops Infantry skills and requisite knowledge to perform effectively; conducts full mission rehearsals to become proficient in Infantry tasks and the planning process; cross-trains to learn duties of other team members and leadership responsibilities; learns from the experiences of others; knows the capabilities of the squad (i.e., people and equipment); learns from performance feedback; practices working together as a unit
Initiative	3 (14)	Assumes leadership roles in the absence of orders or guidance
Situational Awareness	2 (10)	Identifies threats in the environment

[15] See Campbell et al. (1993) regarding declarative knowledge as a prerequisite for certain procedural skills.
[16] The coders initially agreed on one incident (33%); the low agreement was due to the reasons described above.

OCs – training adaptability. Similar to the combat veterans, the OCs discussed developing several skill areas and implementing training approaches related to the adaptability dimensions (Table 9). The largest percentage of responses (48%) related to the *Leads an Adaptable Team* dimension, which paralleled the OCs' reports that this was a primary adaptive capability of the leadership positions they observed. Many of the approaches were discussed by the combat veterans, including training subordinates to perform higher-level leadership duties and delegating leadership responsibilities down to the lowest level. Additionally, the OCs noted that leaders should be trained to include team members in the planning process and allow subordinates to develop their own COAs and learn troop leading procedures (TLP) and operations orders. They emphasized the importance of commander's intent, informing junior leaders of changes to the plan, and giving everyone a chance during training to be a leader in different situations that require them to make immediate decisions.

Consistent with the combat veterans' responses and similar to the OC adaptability responses, many of the skill areas and training methods reported by the OCs reflected the *Deals with Unpredictability* dimension (33%). Specifically, the OCs suggested that training programs should develop skills related to planning and rehearsing contingencies and prioritizing actions and that these skills should be taught to Soldiers in basic training, to NCOs in the Primary Leadership Development Course (PLDC), and to officers in the Officer Basic Course (OBC). The OCs reported that the unit should be trained to deal effectively with changing roles, responsibilities, and plans, such as training Soldiers to switch from engaging in stability and support operations to combat and vice versa, and how to interact with civilians that are not hostile. Finally, they suggested that leaders should be trained to recognize when the mission/situation changes and, in turn, redirect the efforts of the platoon by providing additional guidance [e.g., issuing fragmentary orders (FRAGOs)].

The OCs also identified several techniques that may be effective in training adaptability in general. Many of the responses reflected similar behaviors and methods as reported by the combat veterans regarding *Domain Knowledge* and *Experience* (Table 10). The OCs also described methods for enhancing *Situational Awareness* and *Commander's Intent*, which reflected two of the antecedents of adaptability described by the OCs.

Table 9
Training for Adaptive Capabilities – OC Responses

Adaptive Performance Dimensions	Frequency (Percent) of Incidents (*N*=27)	Summary of Training Behaviors and Methods
Leads an Adaptable team	13 (48)	Train leaders to include team members in the planning process (allow subordinates to develop their own COAs and learn TLP and operations orders, discuss reasons for choosing different COAs during training events); train subordinates to perform higher-level leadership duties; delegate leadership responsibilities down to the lowest level (e.g., working with interpreters, gathering intelligence); listen to subordinates' ideas when making decisions; disseminate information to the Soldier-level (clearly articulate desired intent and changes to the plan to junior leaders); during training, give everyone a chance to be a leader in different situations that require an immediate decision – could use computer simulations; train urban operations using buildings so that the space only allows a few individuals to perform the mission and junior leaders are empowered to make decisions; use feedback to improve performance deficiencies throughout training exercises
Deals with Uncertain and Unpredictable Work Situations	9 (33)	Plan for and rehearse contingencies and prioritizing actions; implement and tailor contingency planning training in basic training for Soldiers, in the Primary Leadership Development Course (PLDC) for NCOs, and in the Officer Basic Course (OBC) for officers; train unit to deal effectively with changing roles, responsibilities, plans and actions (e.g., engage in stability and support operations to combat and vice versa; train Soldiers to interact with civilians that are not hostile and to gather intelligence); train leaders to create new plans as the situation changes; train leaders to recognize when the mission/situation changes and, in turn, redirect the efforts of the platoon by providing additional guidance (e.g., issuing FRAGOs); recreate every possible distracter that team members might experience during the mission
Demonstrates Cultural Adaptability	2 (7)	Provide subordinates with opportunities to practice working with interpreters and using language cards to communicate; train all subordinates how to interact with the local populace
Handles Work Stress	2 (7)	Design training events to reflect high stress situations as experienced during combat (e.g., condensed time line, night operations, high operations tempo, undesirable environmental and physical conditions) so that leaders experience planning and preparing (and team members practice performing) under realistic conditions
Learns Work Tasks, Technologies, and Procedures	1 (4)	Keep knowledge and skills current with changes in technology; learn capabilities of new technology and other assets that are attached to the unit (e.g., sniper teams)

Table 10

General Methods for Training Adaptive Capabilities – OC Responses

Training Areas	Frequency (Percent) of Incidents ($N = 31$)	Summary of Behaviors and Methods
Experience	15 (48)	Demonstrate variations of the same problem; perform training at the company-level repetitively (command and control the entire company); provide platoon leaders with opportunities to make decisions in different contexts either through written exercises and discussion or realistic training scenarios; provide leaders with the opportunity to practice giving operations orders – pair lieutenants in the Infantry Officer Basic Course (IOBC) with NCOs in BNCOC and ANCOC and conduct planning exercises; perform shoot-don't shoot drills; rehearse the mission planning process at home station; require leaders to practice conducting TLP, mission planning, five-paragraph order; require leaders to read case studies (military history) and then discuss as a group the effective leader behaviors; require leaders to observe leaders of other units perform during training exercises so that they experience different leadership styles; conduct urban operations training using buildings and change variables in the environment (e.g., civilians, obstacles, doors, enemy); conduct a range of situational training exercises for squads so that the leaders have to make decisions in different situations; provide opportunities for practicing problem solving through virtual environments; include more tactical problem solving activities (with time constraints, limited resources, etc.) with group discussion and feedback during the ICCC
Domain Knowledge	14 (45)	Know the experience level of your subordinates; know and understand the military decision making process in order to make appropriate changes to it; become proficient in squad and platoon battle drills; provide opportunities to junior leaders to work with superiors; know responsibilities of particular leadership position (does not perform duties of subordinate leaders); cross-train the squad so that each team member knows what each position does for any given battle drill; know doctrine and doctrinal terminology to communicate plans effectively and adapt to changing conditions and situations easier; require all team members and leaders to know the entire spectrum of weapon systems within the platoon; learn from the experiences of others; establish and train team members on standard operating procedures and TTP; become familiar with foreign weapons
Commander's Intent	1 (3)	Train leaders to communicate orders to all team members so that everyone understands the goals of the mission, especially when plans change; communicate task, purpose, intent and end state to all team members
Situational Awareness	1 (3)	Train team members to identify threats in the environment

OPFOR – incidents of adaptability. Forty incidents were reviewed. Of these, 28 were judged to require some type of adaptation and, as shown in Table 11, were categorized into five dimensions reflecting adaptive performance. For the remaining 12 incidents, the members of the OPFOR either did not provide sufficient information to code the incidents or described antecedents of adaptability (discussed below). The initial inter-rater percent agreement was 58%, and similar factors, as described previously, contributed to these discrepancies.

The coders agreed that the nine-dimension model accounted for all of the adaptive capabilities when the definition for the *Leads an Adaptable Team* dimension was modified to include the delegation of leadership responsibilities. No additional adaptive performance dimensions were suggested by the incidents. However, not all of Pulakos et al.'s (2000) dimensions were represented. It was not surprising that the greatest number of incidents (39%) generated by the OPFOR reflected the *Solves Problems Creatively* dimension. Since their job is to act as the opposing enemy, they are encouraged to employ TTP that are outside of and sometimes contrary to Army doctrine. Additionally, 29% of the incidents were associated with the *Leads an Adaptable Team* dimension. Specifically, the OPFOR discussed incidents in which leaders involved team members in planning and decision-making processes, encouraged team members to think of creative ways to accomplish the mission, trained all team members to make sound decisions quickly and independently and to assume leadership roles as needed during combat to accomplish the mission. Finally, they reported that leaders fostered a climate where team members could learn from their mistakes.

The other 32% of the incidents reflected the *Deals with Unpredictability* and *Handles Emergencies* and *Work Stress* dimensions. Many of the behaviors were similar to those reported by the combat veterans. However, the OPFOR did not generate incidents that reflected the *Learns Work Tasks* and *Demonstrates Interpersonal, Cultural*, and *Physically Oriented Adaptability* dimensions. The likely reasons for why the OPFOR did not report behaviors reflecting these categories are the same as those discussed previously for the OCs.

Although the frequency of incidents differed somewhat for the OCs and OPFOR, the two samples reported incidents that were categorized into the same five dimensions. The difference in the rank order of these dimensions may be due, in part, to the different perspectives of these two types of trainers. That is, the OPFOR identified many more incidents related to the *Solves Problems Creatively* dimension because they were encouraged to provide challenging training experiences for the regular Army units.

Table 11

Dimensions of Adaptive Performance for the OPFOR

Adaptability Dimensions	Frequency (Percent) of Incidents ($N = 28$)	Summary of Behaviors
Solves Problems Creatively	11 (39)	Uses equipment in unique ways (outside of doctrine); develops new TTP to accomplish the mission (outside of doctrine)
Leads an Adaptable Team	8 (29)	Involves team members in planning and decision-making processes; encourages team members to think of creative ways to accomplish the mission; trains all team members to make sound decisions quickly and independently; trains all team members to assume leadership roles as needed during combat to accomplish the mission; fosters a climate where team members can learn from their mistakes
Deals with Uncertain and Unpredictable Work Situations	4 (14)	Changes plans and actions in response to new or additional information regarding the situation or time constraints; changes plans in response to guidance from higher echelons; plans for contingencies
Handles Emergencies or Crisis Situations	3 (11)	Makes decisions and performs effectively in life-threatening situations; deals with casualties
Handles Work Stress	2 (7)	Manages emotions (e.g., maintains composure, remains calm) in difficult situations

The results for the question regarding whether role-playing as the enemy changed the way the trainers thought as small unit leaders suggested that, overall, the trainers felt that they had more flexibility (in performing outside of doctrine) than regular Army units (5 incidents were coded as *Solves Problems Creatively*). They also felt that OPFOR units delegated more leadership responsibilities to lower levels and listened more to subordinates' ideas than regular Army units (7 incidents coded as *Leads an Adaptable Team*). The initial inter-rater percent agreement for these incidents was 83%.

OPFOR – antecedents of adaptability. The results also revealed that some of the responses, which were judged not to reflect adaptive performance, could be categorized as *Domain Knowledge/Experience*. Specifically, each reviewer identified a separate incident that reflected developing Infantry knowledge and skills through experience, such as acquiring knowledge about the enemy and learning new TTP through practice.

OPFOR – training adaptability. The OPFOR also reported several skill areas and training methods related to the adaptability dimensions (Table 12). The largest percentage of responses (72%) related to the *Leads an Adaptable Team* dimension and reflected similar techniques and behaviors as discussed previously such as training subordinates to perform higher-level leadership duties (man-down drills) and giving everyone a chance to be a leader in different training situations. Additionally, the OPFOR discussed the importance of allowing leaders to make mistakes during training and receive developmental feedback so that they can learn from their mistakes. Specifically, they noted that trainers should conduct after-action-reviews (AARs) and discuss the mistakes that were made so that all of the team members can learn areas to improve and can be rewarded for making effective decisions. The remaining 28% of the responses paralleled the adaptability responses except for one response which reflected the *Learns Work Tasks* dimension. The behaviors and methods reported for these dimensions were similar to those described previously.

Table 12

Training for Adaptive Capabilities – OPFOR Responses

Adaptive Performance Dimensions	Frequency (Percent) of Incidents ($N = 36$)	Summary of Training Behaviors and Methods
Leads an Adaptable Team	26 (72)	Listen to subordinates' ideas when making decisions; train subordinates to perform higher-level leadership duties (man-down drills); give subordinates leadership responsibilities and challenges; use feedback to improve deficiencies throughout training exercises; allow leaders to make mistakes in training and provide developmental feedback so that they can learn from their mistakes – allow all team members to learn from the mistakes (e.g., conduct AARs); during training, give everyone a chance to be a leader in different situations; train leaders to include team members in the planning process-allow subordinates to learn operation orders skills; train subordinates to perform higher-level leadership duties; train all team members to make sound decisions quickly and independently; reward team members for making effective decisions; train subordinates to consider different perspectives and ways to accomplish the mission; disseminate information down to the lowest level so that everyone understands the mission and their roles and can make informed decisions
Solves Problems Creatively	3 (8)	Consider different perspectives, outcomes of decisions, and risks when planning for missions; train team members new TTP to accomplish the mission (outside of doctrine)
Handles Work Stress	3 (8)	Train leaders to manage emotions (e.g., remain calm) in difficult situations; train leaders to maintain composure and work under pressure, especially during the execution phase of a mission when things do not go as planned; design training events to reflect high stress situations as experienced during combat (e.g., undesirable environmental and physical conditions)
Deals with Uncertain and Unpredictable Work Situations	2 (6)	Foster creative thinking by designing training scenarios with no set parameters of how leaders should react to certain situations; train different styles of techniques and alternate plans
Handles Emergencies or Crisis Situations	1 (3)	Train leaders to make quick decisions in stressful situations
Learns Work Tasks, Technologies, and Procedures	1 (3)	Learn new TTP that are effective for the situation

The OPFOR also identified several techniques that may be effective in training adaptability in general (Table 13), many of which reflected similar behaviors and methods as reported by the combat veterans and the OCs.

Table 13

General Methods for Training Adaptive Capabilities – OPFOR Responses

Training Areas	Frequency (Percent) of Incidents ($N = 21$)	Summary of Behaviors and Methods
Domain Knowledge	12 (57)	Know and understand the assets that are available when conducting a mission (e.g., mechanized units, intelligence); know the capabilities and limitations of equipment; learn from the experiences and mistakes of others; possess tactical and technical knowledge; know the Infantry battle drills, tasks and related concepts; cross-train team members so that they can perform combat lifesaver tasks, employ weapon systems, and conduct land navigation; learn OPFOR techniques
Experience	9 (43)	Practice battle drills in different scenarios; conduct realistic training with available assets monthly; participate in more combat-focused training rotations

General Discussion

Summary of Adaptive Performance Findings and Directions for Future Research

The present research provides a better understanding of the junior Army leader behaviors associated with adaptive performance. An existing taxonomy of adaptive performance was used to categorize critical incidents into nine dimensions. Although there were some differences in the percentage of incidents generated per category, the incidents reflected similar adaptive capabilities *within* each study. For the combat veterans, the majority of the incidents generated by both officers and NCOs reflected the *Deals with Uncertain and Unpredictable Work Situations* and *Handles Emergencies or Crisis Situations* dimensions. Many of the remaining incidents for both samples tapped three other dimensions: *Solves Problems Creatively*, *Learns Work Tasks, Technologies, and Procedures,* and *Handles Work Stress*.

The differences in the rank order of the dimensions suggests that leaders may consider some adaptive capabilities more important or spend more time performing certain behaviors depending on whether they are leading platoons or squads. For instance, since the platoon leaders (officers) reported more incidents of changing roles, responsibilities, and plans as well as solving problems creatively to accomplish the mission, these adaptive capabilities may be critical when commanding a platoon of three or four squads. In particular, platoon leaders need to be able to consider alternative COAs, enemy reactions, and multiple perspectives. On the other hand, since the squad leaders (NCOs) reported a higher frequency of dealing with casualties and making decisions in life-threatening situations as well as learning new work techniques, these adaptive capabilities may be critical when leading a squad of nine individuals. Specifically, squad leaders need to be able to assist squad members during emergencies, take over a team member's position, if necessary, and teach team members new TTP.

It is also important to note that the findings for the NCOs differ somewhat from Pulakos et al.'s (2000) results. The NCOs in 2000 provided importance and time spent ratings for all of the dimensions, and the results revealed the following rank order for the three highest dimensions: 1) *Learns Work Tasks*; 2) *Handles Work Stress*; and 3) *Deals with Unpredictability.* On the other hand, the top three dimensions for which the NCOs in 2005 generated incidents were the following: 1) *Handles Emergencies*; 2) *Deals with Unpredictability*; and 3) *Learns Work Tasks/Solves Problems Creatively* dimensions. The results suggest that the NCOs for this sample performed behaviors related to handling emergencies and dealing with unpredictable situations more often compared to those who participated in Pulakos et al.'s study in 2000. The NCOs in the present research were combat veterans of post September 11, 2001 operations, thus, the results may indicate a shift in the critical adaptive capabilities for these positions compared to those reported prior to 2001. The combat veterans in the present research have executed missions in the dynamic and complex COE and reported the behaviors they performed to effectively accomplish these missions.

For the JRTC Project, the OCs and OPFOR identified the same five adaptability dimensions. For the trainers, the majority of the incidents tapped three dimensions of the model: *Solves Problems Creatively, Leads an Adaptable Team,* and *Deals with Uncertain and Unpredictable Work Situations*. The differences in the frequency in which incidents were

generated for the dimensions may be due to the different perspective of the two types of trainers, such that the OPFOR were encouraged to provide a challenging training experience for the participating units. The OPFOR also discussed the benefits of role-playing the enemy such as having the flexibility to think of creative solutions to accomplish their goals. Further, they noted that the OPFOR units delegated leadership responsibilities to lower levels more than regular Army units. Thus, the findings suggest that one method for developing adaptive capabilities relating to *Solving Problems Creatively* and *Leading an Adaptable Team* may be to develop training exercises in which the unit is constrained by resources so that leaders have to think creatively of ways to accomplish the mission. However, the trainers would need to ensure that the leaders are allowed to fail and are not punished or discouraged for thinking "outside the box." When creative solutions are executed, but fail, the trainer needs to provide the appropriate feedback to encourage the leader to think about issues not previously considered that could result in a more effective response.

The differences in the findings for the adaptability dimensions between the two research projects are most likely to due the limitations of the training environment. As described previously, the wording of the interview questions and the presentation of only four of the adaptability dimensions may have limited the breadth of incidents that were generated. That is, the trainers may have been guided to describe incidents relating to only mental adaptive performance domains and not social or cultural performance domains. In addition, because the trainers are limited in the extent to which they can simulate combat stressors, it may be difficult to create the environmental conditions that would elicit physical adaptive performance. Finally, the trainers reported many more incidents reflecting *Leads an Adaptable Team* than the combat veterans. One reason for this may be that leaders are given more time for planning activities and for developing subordinates in training contexts than in operational environments.

Overall, for both studies, the nine-dimension model accounted for all of the adaptive capabilities when the definition for the *Leads an Adaptable Team* dimension was modified to include the delegation of leadership responsibilities. No additional adaptive performance dimensions were suggested by the incidents. However, not all of Pulakos et al.'s (2000) dimensions were represented in each sample. In general, participants for both research projects did not generate many incidents reflecting the *Interpersonal*, *Cultural*, or *Physical Adaptability* dimensions. For the training sample, this could be due to the reasons described previously. However, this also could be due to the military nature of the samples. For instance, Army leaders may consider interpersonal and physical skills and abilities part of their troop leading behaviors and not adaptive responding. For this particular sample, physical activity is likely viewed as a core requirement of the job (i.e., task performance; e.g., Borman & Motowidlo, 1993) and not as an adaptive response. Likewise, communication and interpersonal skills may be viewed as leader task performance (see Conway, 1999). We recommend that raters receive training on the level and type of performance that is typically expected for a particular position compared to that which would be considered an adaptive response.

One fruitful area of future research would be to investigate whether the adaptability dimensions are distinct from task and contextual performance (e.g., Borman & Motowidlo, 1993). For example, as part of a larger study on the Basic Officer Leadership Course (BOLC), Pleban, Tucker, Centric, Dlubac, and Wampler (2006) obtained NCO squad leader ratings of the

newly commissioned lieutenants' performance on the nine adaptability dimensions and found support for the model (see also Tucker & Pleban, 2006). The results of confirmatory factor analyses demonstrated that the data adequately fit the nine-factor model. However, the findings also indicated that adaptability was highly related to a measure of performance reflecting leadership tasks such as building teams and motivating and assessing subordinates. Additional research is needed to determine whether adaptability is a distinct component of performance or reflects one or more of the existing performance categories (see Campbell and colleagues, 1991; 1993; Conway, 1999; & Motowidlo and Van Scotter, 1994).

Future research also should address the conceptual overlap among the dimensions. For the present research, there was conceptual overlap for incidents reflecting interpersonal and cultural adaptability. As Soldiers interacted with the local populace to negotiate satisfactory outcomes, they displayed both *Cultural* and *Interpersonal Adaptability*. Further, raters must consider the types of skills possessed by individuals in specific occupations when coding behaviors for the dimensions reflecting motivational and affective attributes, such as *Handling Work Stress* and *Emergencies*. For example, because Soldiers are trained to perform effectively in situations involving unarmed conflict (e.g., raids, crowds), many of these incidents were coded as *Deals with Unpredictability* rather than *Handles Emergences.*

Limitations of the Research

Two limitations of the research are noted. First, a retranslation of the incidents by different raters, who were not involved in the original coding of the incidents, was not possible; therefore, future research should employ methods that allow for rigorous treatment of the data to reduce rater bias. Second, since the data were collected through interviews, the results may not reflect all of the adaptive capabilities of these positions. Future research should validate these findings by administering surveys to collect ratings regarding the importance and time spent performing the behaviors on all of the dimensions as conducted by Pulakos et al. (2000).

Recommendations for Training Adaptive Performance

The findings for both research projects suggest that training programs should focus on helping leaders learn how to develop adaptive teams. Many leaders suggested training that develops behaviors such as including subordinates in the planning process, listening to subordinates ideas, allowing subordinates to make independent decisions, and delegating leadership responsibilities to the lowest level. Further, the findings suggest that the ability to communicate intent to team members may be a critical factor in developing adaptive responding skills in units. The concept of commander's intent may help to build shared mental models of the mission which allows subordinates to act independently in the absence of orders or when communication is reduced (cf. Cannon-Bowers & Salas, 1998).

Across both research projects, the findings also indicate that training programs should develop skills for *dealing with unpredictable situations* such as requiring leaders to perform effectively when the goals of the mission change or when the environment changes from a threatening one to a non-threatening one and vice versa. Simulations or realistic field exercises that provide leaders with the opportunity to plan for contingencies, prioritize actions, create new

plans as the mission changes, and make decisions in different situations may be effective for developing this adaptive capability. Developing systemic thinking and understanding of nonlinear effects also could help leaders deal better with unpredictability. Computer models can aid in the development of these skills and help decision makers analyze the affects of alternative strategies as well as the unintended consequences of their actions (e.g., Tucker, Cullen, Sinclair, & Wakeland, 2005). The computer models can be used to train leaders to make quick decisions as they can be programmed to simulate the time pressures inherent in combat.

The findings also suggest that adaptive capabilities can be enhanced by developing specific skills. Many of the leaders reported that developing creative problem solving skills is critical to enhance adaptive responding. Computer simulations or paper and pencil vignettes that challenge leaders to consider different ways of accomplishing the mission, analyze problems from multiple perspectives, and assess the outcomes of their decisions would aid in the development of this adaptive capability (see Lussier and Shadrick, 2003, for a computer simulation that promotes adaptive battlefield thinking skills). To help leaders cope with work stress and make better decisions in crisis situations, training could focus on developing emotional intelligence and skills to manage their emotions (e.g., Caruso & Wolfe, 2004). To develop emotional skills, training programs should teach leaders to identify emotions, use emotions to facilitate thought, understand emotions, and manage emotions (Caruso & Wolfe, 2004). Finally, it is important to note that training programs aimed at maximizing adaptive capabilities also should enhance self-regulatory and metacognitive skills to achieve learning outcomes and performance goals (e.g., Chen, Thomas, & Wallace, 2005; Kozlowski, 1998; Salas, Burke, & Stagl, 2004). That is, leaders, who monitor and regulate their own learning, have a better understanding of the task domain and can better acquire and integrate key skills and promote adaptive team performance (Kozlowski, 1998; Salas, Burke, & Stagl, 2004).

Institutional training. Despite the importance given to developing adaptive capabilities, the conclusion from the Army Training and Leadership Development Panel (Department of the Army, 2001a) indicates that the Army is not developing adaptable, self-aware leaders. From an institutional standpoint, current training approaches and philosophies should be re-examined. When asked to address training shortcomings in this area, the OCs provided several compelling approaches. For example, some of the OCs recommended dedicating training time during OBC for lieutenants to work with NCOs from ANCOC in practical exercises that require developing a platoon plan from a company operations order. This type of exercise would provide lieutenants with hands-on opportunities to fine tune their analytical skills and actually work with their subordinate leaders (*develop/lead an adaptable team*) to develop contingencies and proactive responses.

In fact, recent changes to some institutional courses reflect these ideas. For example, the curriculum of the new Maneuver Captains Career Course includes a module in which Infantry Brigade Combat Team-track Captains train with Infantry Second Lieutenants whereas Heavy Brigade Combat Team-track Captains conduct a company gauntlet field training exercise with Second Lieutenants from the Armor BOLC III (Clark & Hayes, 2006). The gauntlet field exercise requires the students to build a team and provide leadership to brand-new platoon leaders (second lieutenants) while developing and communicating a plan and dealing with other stressful events such as improvised explosive devices and civilian encounters. Clark and Hayes

reported that the exercise develops the students' abilities to multi-task and make rapid decisions. They reported that the students reacted positively to the inclusion of the lieutenants in the field exercise and that it would remain part of the course curriculum.

The OCs were in general agreement that the development of adaptive capabilities should begin early in the Soldiers' training: PLDC for NCOs and OBC for officers. Similarly, Leonard et al. (2006) asserted that modules, which emphasize methods for effective decision-making in high-stress situations, should appear in the curricula of all Army schools and leader education programs. The OCs also recommended providing as many Soldiers as possible with opportunities to attend formal courses that require adaptability (e.g., Ranger school). However, as many Soldiers would not qualify for these courses, the OCs recommended that training developers use the Ranger and Special Forces Qualification Course as models to develop adaptive performance training programs that could be realistically taught at home station.

Another strategy would be to provide OBC students the opportunity to observe other lieutenants lead platoons during training missions at Combat Training Centers under the mentoring of an OC. Under these conditions, the OCs would be able to identify for the student the adaptive behaviors (from subtle interpersonal mannerisms to more overt actions) that result in not only effective leadership behaviors but also successful unit performance. Alternatively, trainers could include exercises in OBC that either depict examples of good/poor adaptability or that require an adaptive response, such as video clips, "What now lieutenant" vignettes, and role-playing activities, and facilitate discussions designed to develop the requisite critical thinking skills. This type of instruction has been included in the recently developed Maneuver Captains Career Course such that historical and Counterinsurgency Operations vignettes, tactical, ethical, cultural, and high-stress decision-making exercises, and live and virtual training are used to train adaptive responding and rapid decision-making skills (Clark & Hayes, 2006; Haskins, 2006). As the course progresses, the students are challenged with increasingly difficult scenarios (e.g., given incomplete or incorrect information, insufficient resources, less time to identify critical information and make a decision, changed missions, accelerated briefing requirements) and are required to brief their classmates and instructors and justify their plans and decisions (Clark & Hayes, 2006; Haskins, 2006). Haskins also reported that a goal of the course is to "develop captains with an instinctive preference for creating courses of action that are flexible and can be adapted to changing circumstances" (p. 39).

While some of the strategies described here may appear unrealistic (too costly or time consuming), they are provided to encourage training developers to consider alternative approaches for enhancing small unit leader adaptive training at the institutional level. Further, recent changes to some institutional courses report positive outcomes for these types of training approaches. Cost benefits could be realized if trainers employ the adaptive performance model when designing training programs such that by focusing on only those adaptive capabilities that are identified as requirements for the duty position, time and other resources may be saved. To assist training developers in maximizing adaptive performance, a summary of the findings from the literature review and data are provided (see Table 14). Domain knowledge and adaptive experience are considered more malleable attributes and more trainable than cognitive ability and personality traits, which are considered stable attributes and less trainable (Mueller-Hanson, 2005). Thus, training developers seeking the highest payoffs for the cost should base training

programs on the domain knowledge and skills of the individuals. Then, they could use the model to identify the adaptive capabilities of specific duty positions. Finally, as depicted in Table 14, a program can be created that develops the skills related to different adaptability dimensions. Several approaches are listed that may maximize adaptive responding.

Table 14

Summary of Findings from the Literature Review and Results

1) Build/Develop/Enhance	2) Identify Adaptive Behaviors	3) Train Leaders To	4) By
Build Domain Knowledge • Training developers should first build domain knowledge (e.g., Infantry tasks and related concepts; planning; doctrine; COE-related experiences; TTP). Develop Infantry Skills through Experience • Infantry skills should be developed through repetition and feedback; expose leaders to new and challenging situations across a variety of realistic training experiences and environments; cross-train. Develop Initiative • As leaders build knowledge and develop skills, they gain confidence and initiative. Enhance Situational Awareness • As leaders make decisions in a variety of situations, they learn to consider the elements of the environment and develop situational awareness.	• Deals with Uncertain and Unpredictable Work Situations	• Recognize the need to shift task priorities and modify actions • Perform effectively when the goals of the mission, environment, roles, and responsibilities change • Identify key aspects of ambiguous situations and creates new plans as the situation changes • Plan for/rehearse contingencies	• Using scenarios that explain why procedures are appropriate for certain conditions and that assist leaders in considering different ways of accomplishing the mission and assessing the outcomes of their decisions • Developing systemic thinking skills • Requiring leaders to make decisions in many different situations
	• Solves Problems Creatively	• Consider different perspectives and outcomes of decisions	• Wargaming multiple courses of action • Practicing thinking outside the box
	• Leads an Adaptable Team	• Include subordinates in the planning process • Listen to subordinates' ideas • Delegate leadership responsibilities and flow information down to the lowest level • Give everyone a chance to be a leader in situations that require an immediate decision • Make decisions autonomously	• Using vignettes, field exercises, role-playing activities, computer simulations, man-down drills • Developing understanding of commander's intent • Providing feedback on possible outcomes of decisions • Developing reward systems that reinforce adaptability
	• Handles Emergencies or Crisis Situations	• Make decisions/perform effectively in life-threatening situations	• Developing emotional intelligence and control, self-regulatory skills
	• Handles Work Stress	• Deal effectively with Soldiers' emotions during difficult situations; manages own emotions	• Designing training events to reflect high stress situations as experienced during combat • Adding uncertainty and friction to training events
	• Learns Work Tasks, Technologies, and Procedures	• Learn capabilities/new TTP that are effective for that unit/situation	• Developing self-regulatory, meta-cognitive skills • Conducting AARs/debriefs after mission/training
	• Demonstrates Cultural Adaptability	• Interact with the local populace	• Providing cultural awareness training to units
	• Demonstrates Interpersonal Adaptability	• Change behavior to work effectively with individuals, units	• Developing communication and negotiation skills
	• Demonstrates Physically Oriented Adaptability	• Show resiliency in extremely physically demanding situations	• Developing training events that reflect combat (undesirable environmental/physical conditions)

Note. Dimensions are rank-ordered according to the percent of responses across the two research projects.

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Appendix A

Interview Questions

Combat Veterans Project

1. Please describe circumstances during your combat tour in which your unit had to exhibit adaptability in some unexpected or new situation (For example, responding to unexpected contact with the enemy; taking casualties that required unit members to assume roles that were not their specialty; being able to fend off an attack by insurgents and minutes later deal with questions and complaints of local leaders, etc.).

2. Please describe circumstances during your combat tour in which you as a leader had to exhibit adaptability in some unexpected or new situation (For example, responding to unexpected contact with the enemy; on the spot changes of mission plans to fulfill new mission objectives, etc.).

3. How did you try to prepare your unit to be adaptable and effective in the kinds of situations you described in the previous question?

4. How did you try to prepare yourself as a leader to be adaptable and effective in the kinds of situations you described in the previous question?

Joint Readiness Training Center Project

OCs

1. Using the definition just presented, can you recall any specific incidents of good adaptive thinking that you observed during mission planning, preparation, or execution?

OPFOR

1. Using the definition just provided, briefly describe the mission and the incidents that you felt demonstrated good leader adaptive thinking.

2. How has playing the role of an adaptive, unconventional OPFOR changed the way you think as a squad/platoon leader/company commander?

3. How does the OPFOR train its leaders (and Soldiers) to be more adaptable in their thinking and their actions?

4. What do you do, specifically, with your Soldiers (i.e., Soldiers in your squad(s)/platoon) to develop these (adaptive thinking) skills?

OCs and *OPFOR*

1. In your opinion, what skills areas do leaders need to work on to improve their ability to think and act more adaptively?

2. What can the unit do at home station to improve leader adaptability?

3. Assuming no time or resource constraints, how would you set up a training program to promote leader adaptability? Team adaptability (training teams/squads to adapt to new situations)? How would you assess proficiency?

Appendix B

Acronym List

AAR	After-Action Report or After-Action Review
ANCOC	Advanced Noncommissioned Officer Course
ARI	U.S. Army Research Institute
BNCOC	Basic Noncommissioned Officer Course
BOLC	Basic Officer Leadership Course
C2	Command and Control
COA	Course of Action
COE	Current Operational Environment
EPW	Enemy Prisoner of War
FM	Field Manual
FRAGO	Fragmentary Order
ICCC	Infantry Captains Career Course
IOBC	Infantry Officer Basic Course
JRTC	Joint Readiness Training Center
MCDP	Marine Corps Doctrinal Publication
MDMP	Military Decision-Making Process
MOOTW	Military Operations Other Than War
NCO	Noncommissioned Officer
OBC	Officer Basic Course
OC	Observer-Controller
OEF	Operation Enduring Freedom
OIF	Operation Iraqi Freedom
OPFOR	Opposing Force
PLDC	Primary Leadership Development Course
SF	Special Forces
SME	Subject Matter Expert
TLP	Troop Leading Procedures
TRADOC	U.S. Army Training and Doctrine Command
TTP	Tactics, Techniques, and Procedures