

Technical Report 1405

Army Command Climate: Construct Development and Continued Investigation of the Viability of Single-Item Measures

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**United States Army Research Institute
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ARMY COMMAND CLIMATE: CONSTRUCT DEVELOPMENT AND CONTINUED INVESTIGATION OF THE VIABILITY OF SINGLE-ITEM MEASURES

EXECUTIVE SUMMARY

Research Requirement:

Command climate is a high priority for the U.S. Army. Army policy requires that all active duty Army company commanders conduct an initial command climate assessment within 30 days of assuming command and annually thereafter while in command (Army Regulation 600-20; U.S. Department of the Army, 2020). Because Soldiers respond to multiple lengthy surveys, survey fatigue is an important concern. Survey fatigue can lead to low response rates and potentially decrease the quality of the data received. If command climate dimensions could be validly assessed with single items as opposed to multi-item scales, the survey time requirement for Soldiers would be significantly reduced. The U.S. Army Research Institute for the Behavioral and Social Sciences (ARI) recently conducted research and demonstrated the viability of the single-item measure approach (Adis et al., 2020). The initial research showed that the number of items required to assess each command climate dimension could be substantially reduced; thus, there was an opportunity to investigate additional command climate constructs while still maintaining a shorter survey length. The current effort focuses on expanding beyond the initial set of 13 command climate dimensions to investigate the utility of additional dimensions. The goal was to identify dimensions of command climate that would be distinct from the original 13 dimensions and would likely be related to important unit outcomes.

Approach:

The research team conducted a focused review of the climate literature to identify new constructs to supplement those measured in previous ARI command climate research. The project team identified a total of 11 new climate dimensions and developed multi-item scales to assess each new dimension. These items served as the foundation for a series of three focus groups conducted to gather feedback regarding the content of the items and the value of these dimensions in setting the command climate of a unit. We developed a set of multi-item scales, a single item, and follow-up diagnostic items for each dimension. Diagnostic items consisted of items designed to capture detailed information regarding sources of climate issues within units. If the single items identified potential problem areas, the diagnostic items could be used to further investigate the cause or source of the issues. Based on the focus group feedback, we reduced the 11 new climate dimensions to a set of eight dimensions.

In the next project phase, 1,710 Soldiers from 68 companies across 11 locations provided survey data to investigate the psychometric properties and criterion-related validities of both the single-item measures and multi-item scales. Soldiers completed the multi-item scales, single-item measures, diagnostic items, and a series of criterion measures such as collective efficacy, unit performance, and job satisfaction. Battalion commanders or other members of the battalion leadership team completed outcome measures for each company as a whole.

Findings:

Results generally supported the feasibility of using a short, single-item tool to assess company-level command climate. Results showed strong support for the reliability of the multi-item assessment and moderate support for the reliability of the single-item assessment. Convergent validities of the single items with the multi-item scales were at or above .72 for all eight scales, and predictive validities with proposed outcomes for the single items were comparable to predictive validities associated with many of the multi-item scales.

Support for aggregating the measures to the group level was mixed. Within- and between-group agreement indices suggested that seven of eight multi-item scales and three of eight single-item measures could be aggregated to the company level. We used hierarchical regressions to determine whether the multi-item scales explained significant additional variance in the criteria over and above that explained by the single items. Of the 13 company-level dimension-criteria relationships that were significant, over half (54%) of the hierarchical regressions found that the multi-item scale added significant variance to the single item in predicting the criteria, although most increases were in the five to eight percent range.

Criterion-related validity evidence was generally strong for the multi-item and single-item measures. Of the seven multi-item scales that were aggregated to the company level, all were significantly related to at least one of the hypothesized outcome measures. All three of the single-item measures (trust, safety, and adaptability) that were aggregated to the company level were related to at least one outcome. In addition, for those three dimensions, the multi-item and single-item measures showed similar profiles of criterion-related validity relationships.

We examined the validity of the practical application of the single-item assessments by comparing the performance of the single items to the multi-item scales for identifying dimensions that were above or below a given mean threshold, which would signal to a commander that there was a possible climate problem. These results indicate that use of a short, 8-item measure composed of single items measuring various aspects of climate would produce almost exactly the same results regarding which dimensions might indicate a climate issue as would a much longer, multi-item survey. The virtually identical results demonstrate the potential usefulness of the single-item approach. Using the short survey would allow commanders to quickly assess command climate within their units and follow-up where needed to address areas of concern.

Utilization and Dissemination of Findings:

After further validation, the measures developed for this project can provide Army leaders with a useful tool to help them assess climate within their units and identify potential problems and concerns. The new climate dimensions expand the areas that can be assessed and provide a more complete description of unit command climate. The single-item measure and diagnostic follow-up approach shows promise for reducing survey burden by shortening command climate surveys. Further refinement of the diagnostic items and development of guidelines for their use is recommended.

ARMY COMMAND CLIMATE: CONSTRUCT DEVELOPMENT AND CONTINUED INVESTIGATION OF THE VIABILITY OF SINGLE-ITEM MEASURES

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Army Command Climate: Construct Development and Continued Investigation of the Viability of Single-Item Measures

An organization's climate reflects members' perceptions of various aspects of the organization, such as the level of support members receive from leaders and peers, perceptions of trust among unit members, and perceptions of ethical leadership. These opinions can influence individual and group behaviors within the organization. Definitions vary, but most describe organizational climate as "socially shared perceptions of organizational members regarding key characteristics of their organization" (Zohar & Hofmann, 2012, p. 643). In the Army, command climate is defined as "the organization's tone—the characteristic atmosphere in which people work" (Army Doctrine Publication 6-0; U.S. Department of the Army, 2019b, p. 2-16). Leaders' values, skills, and actions influence a unit's command climate, and leaders are responsible for setting the atmosphere or tone of the unit (Army Doctrine Publication 6-22; U.S. Department of the Army, 2019a).

Command climate remains a high priority for the U.S. Army. Former Secretary of the Army John McHugh stated that, "command climate assessments help commanders establish and maintain a positive command climate, which, in turn, helps sustain a Ready and Resilient Force. Surveys give commanders insight into unit perceptions and serve as the starting point for assessing the overall climate of the command" (Army Directive 2013-29; McHugh, 2013, p. 1-2). Valid and reliable measures of command climate provide unit leaders with actionable insight into unit members' shared perceptions of the unit. Command climate survey results provide a useful tool to help leaders quickly identify and resolve potential problems and develop positive unit climates. The Army Command Policy requires that all active Army company commanders conduct an initial command climate assessment within 30 days of assuming command and annually thereafter while in command (Army Regulation 600-20; U.S. Department of the Army, 2020). Battalion commanders and above are required to conduct an initial command climate survey within 60 days of assuming command with follow-up surveys administered annually. Given the frequency of administration of the command climate and other surveys, Soldiers are faced with significant survey burden. Additionally, research has demonstrated that increased survey burden can have a negative impact on the quality of the data collected (Dillman et al., 1993; Stanton et al., 2002).

The U.S. Army Research Institute for the Behavioral and Social Sciences (ARI) has been conducting innovative research to develop and validate a prototype of single-item measures to assess command climate (Adis et al., 2020). Adis et al. (2020) developed measures for 13 climate command climate dimensions, collected data to evaluate the measures' psychometric quality and criterion-related validity, and compared the results of the single items with the multi-item scales. They found preliminary support for the feasibility of using the 13-item assessment tool as a quick "health-check" on the command climate of a unit. Single items would then be combined with follow-up diagnostic items designed to capture detailed information regarding sources of climate issues within units if the single items identify potential problem areas. ARI's efforts to examine this new method for assessing command climate offer an opportunity to advance the theoretical understanding of command climate and to provide insight into a new methodology for assessing command climate.

The current effort extends ARI's prior research by identifying additional dimensions of command climate and subsequently investigating the validity of single-item measures of these command climate dimensions. This report describes the identification of additional climate dimensions, development of items to measure these new dimensions, and conduct of focus groups to refine the assessments. Next, the report describes a validation study conducted to evaluate the psychometric properties and criterion validity of the single-item measures and associated multi-item command climate scales.

Measuring Command Climate

Several key factors are important to consider in the identification of new climate constructs and their measurement. First, consistent with definitions in the organizational climate literature, we define command climate as a shared, group-level perception. These shared perceptions among individuals within a specified level of the organization theoretically justify the aggregation of individual perceptions of climate to the group or organizational level (Isaksen & Akkermans, 2011). In order to aggregate measures to the unit level, researchers must demonstrate within-unit agreement using common aggregation statistics such as intra-class correlation coefficients (ICCs) and r_{wg} (LeBreton & Senter, 2008).

Second, clear specification of the target of the perceptions is critical for accurate measurement. The organizational level that the construct and measure are targeting (e.g., platoon, company) should be clearly identified. Climate measures often fail to specify the appropriate organizational level of analysis (e.g., Brown et al., 1998), making the results difficult to interpret. Failure to specify the appropriate level of analysis may be responsible for the low reliability of some measures (e.g., Brown et al., 1998). If participants answer items with different levels of the organization in mind, reliability will likely suffer. Thus, a measure of command climate should have items that target shared perceptions of *specific* unit-level characteristics. For example, the item, "Members of my company trust one another" specifies both the shared aspect of the perceptions as well as the specific target (i.e., company) of those perceptions.

Finally, the use of domain specific climate constructs provides several benefits. Researchers have approached organizational climate from both a global or broad perspective and from a domain-specific perspective (Zohar & Hofmann, 2012). Early organizational climate research focused on broad global perceptions of climate, but there were challenges with establishing discriminant validity for the underlying dimensions with this approach (Zohar & Hofmann, 2012). In later years, there was a shift in the literature, with the description of climate as a domain-specific construct (Zohar & Hofmann, 2012). Ehrhart et al., (2013) similarly highlighted the movement toward focused climates and distinguished between two types of focused climates: strategic climates and process climates. Strategic climates "involve the extent to which the organization's environment emphasizes a specific strategic outcome that can usually be measured by external criteria" (e.g., service climate, safety climate) while process climates "are focused instead on internal processes that occur in organizations as a part of daily organizational functioning" (e.g., ethical climate; Ehrhart et al., 2013, p. 87). For the purposes of the current research, we concentrate on focused or domain-specific climate measures, which affords three main benefits. First, this approach is consistent with the current Army climate measurement methodology. Second, this method allows one to clearly specify the domains of

interest and to distinguish command climate items from general attitudes. Third, this approach allows one to set well-defined boundaries regarding the targets of interest and to specify and empirically examine theoretical linkages between the specific climate dimensions and related outcome constructs (Ehrhart et al., 2013; Zohar & Hofmann, 2012). We considered these factors when identifying new command climate constructs and developing measures.

Command Climate Measurement in the Military

In the military, organizational climate is defined as a *shared* attribute of the *unit* (e.g., company, battalion). Multiple studies have demonstrated the importance of organizational climate in military settings (see Jones, 2003). Historically, there are examples where questionable command climates may have influenced behaviors that are not acceptable in the military according to ethical conduct (Doty & Gelineau, 2008). Conversely, previous research has linked positive command climate to desirable organizational outcomes, such as increased performance of Navy ships during training exercises and increased Army junior officer retention rates (Jones, 2003). Jones (2003) called climate the “critical link between the individual and the organization that ultimately shapes the effectiveness of the organizational processes and the quality of the organization's accomplishments” (p. 4). Lempke (1988) described important dimensions of command climate, including command trust, organizational consistency, organizational simplicity, command stress, mutual respect and human dignity, innovation, competence, caring, responsibility, accountability, challenge, and inclusion. In response to a request by the Secretary of the Army, officers at the U.S. Army War College undertook an effort to identify key themes related to effective command climate. Themes included trust, respect, loyalty, communication, shared vision, focus on the mission, clear goals, predictability/consistency, humor, resource balance/alignment, esprit de corps, team building, and learning/professional development (Bullis & Reed, 2003). The Army and other military services have used a number of different measures to assess climate as well as leader behaviors associated with setting and maintaining command climate. We reviewed these measures to capture any areas that might be important to include in a command climate survey. Several of these measures are described below.

Command Climate Survey (CCS). ARI developed the CCS in 1998 as an update to a previous command climate measure (Jones, 2003). This 24-question instrument addresses several important domains: teamwork, leader care, openness of dialogue between seniors and subordinates, meaningfulness of work, fairness, adequacy of facilities, equipment, and training, social environment, stress, exit interest, sexual harassment, rewards and recognition, and mission clarity and priority. An analysis of the CCS items revealed that about 30% of the CCS measures related to perceptions about racial and gender equality (Jones, 2003). The CCS was designed to provide “a unique wide-angle view of key factors affecting the unit’s state of readiness” and to measure “what Soldiers think and believe, which affects their behaviors” (Jones, 2003, p. 11). Although the CCS has many positive attributes, research has shown that it does not assess multiple areas that significantly contribute to climate, such as trust, loyalty, commitment, teamwork, professional job satisfaction, or perceived alignment of proclaimed beliefs and actual practices (Jones, 2003).

Defense Equal Opportunity Management Institute (DEOMI) Organizational Climate Survey (DEOCS). The DEOCS was designed to measure aspects of organizational climate relating to equal opportunity/fair treatment, organizational effectiveness, and sexual assault (Defense Equal Opportunity Management Institute, 2014; Truhon & Parks, 2005). This instrument is used both in military units and civilian sectors in the Department of Defense (Truhon & Parks, 2005) and was modified in 2017 to update the content and reduce the total number of items from 95 to 56. However, due to the way in which the items were numbered, this iteration of the survey actually included 115 questions. In 2020, the Office of People Analytics further redesigned the DEOCS, which now includes a total of 92 items. The current version includes items designed to assess protective factors (e.g., cohesion, fairness, inclusion) and risk factors (e.g., toxic leadership, workplace hostility, racially harassing behaviors).

Center for the Army Profession and Leadership (CAPL) Annual Survey of Army Leadership (CASAL). The CASAL is a measure that is used by the Center for the Army Profession and Leadership (CAPL) to assess Army leader attitudes, leader development, quality of leadership, and the contribution of leadership to mission accomplishment (Hinds & Steele, 2012). The CASAL was designed to provide research guidance for policy decisions and program development and is modified every year to ensure that the survey assesses contemporary issues in the Army (Riley et al., 2013). This measure is comprised of over 100 items that cover topics on the quality of leadership and leader development (Hinds & Steele, 2012). Although the CASAL is not a “climate” measure, it does capture information about leader competencies, attributes, and behaviors and contains items that are related to climate-relevant constructs (e.g., deployed and garrison settings, morale, characteristics of the working environment, trust, and negative leadership).

Multi-Source Assessment and Feedback (MSAF). The MSAF is a multi-source feedback system that was developed to help Army leaders meet the three basic goals of leadership: leading others, developing the organization and its individual members, and accomplishing the mission (Fiscus, 2011). The 50-item instrument measures the core leader competencies and supporting behaviors found in Field Manual 6-22 (FM 6-22; U.S. Department of the Army, 2015) that are relevant to all leaders throughout the Army (Fiscus, 2011). While the MSAF was not designed to measure command climate, many of the leader competencies could be important for setting command climate.

Ethical Climate Assessment Survey (ECAS). The ECAS is an instrument developed in the late 1990s and presented in FM 22-100.70 (Allen, 2015). This instrument focuses on the degree to which organizational beliefs match organizational practices from an ethical perspective and is comprised of four dimensions: individual character, unit/workplace policies and practices, unit leader actions, and environmental/mission factors (Allen, 2015). The ECAS was intended to be used as a simple and anonymous survey instrument and as a way for leaders to facilitate open discussion about expectations of conduct or ethical matters affecting the command (Allen, 2015). Unfortunately, the ECAS was not found to be valid as a research instrument in that it did not rigorously measure the content it was intended to measure, and its use was therefore discontinued (Allen, 2015).

Navy Climate Index (NCI). The NCI is a recently developed measure that is composed of items from the Navy-wide Personnel Survey (NPS) (Bann et al., 2011). The NCI is a measure of psychological climate, focusing on individual perceptions rather than shared perceptions that are the focus of organizational climate measures. This instrument was developed to “provide a single, useful dashboard metric to assess the overall climate in branches of service as well as in various military communities (e.g., aviation, surface, medical) and to facilitate tracking perceptual changes of the work environment over time” (Bann et al., 2011, p. 255). The NCI measures eight dimensions of psychological climate: advancement/promotion, autonomy/challenge, leadership, communication, fairness, job security, tempo, and work group (Bann et al., 2011). NCI scores have been shown to positively relate to job satisfaction, morale, organizational commitment, and retention intentions (Bann et al., 2011).

Identifying Additional Command Climate Dimensions

The measures developed by the Army and other military services provided useful insight into potential command climate dimensions and leader behaviors associated with developing and maintaining command climate. As described above, the primary focus of the current effort is to extend the investigation of single-item measures of command climate conducted under a separate effort (Adis et al., 2020) using additional climate topics. By dramatically reducing the number of items required to assess each dimension to a single item, there is an opportunity to investigate additional command climate constructs while maintaining the shorter survey length. A number of potential command climate areas were not included in the initial set of 13 dimensions, but had potential for meaningful impact on unit outcomes. We first conducted a literature review to identify new dimensions of command climate. Measures of climate are often developed inductively, leading to content contamination and deficiency (Beus et al., 2010). When measures are developed in this manner, the result is often items that are too specific to be useful across jobs or items that are not theoretically justified (Beus et al., 2010). Thus, in our approach to developing new content, we focused on identifying and specifying the theoretical conceptualizations of the additional dimensions of command climate.

In addition to the military climate and other measures above, we reviewed literature related to climate constructs in the Army, the Armed Forces, and organizations in general, with a focus on those areas that might meaningfully contribute to the evaluation of command climate in the Army. The results of our literature review were used to identify a set of potential additional dimensions. These dimensions were further evaluated in the subsequent phases of the project.

Methodology

Our review of the organizational climate literature included select published articles, papers, technical reports, military publications and doctrine, and briefings made available to us by ARI and other military sources. We used several methods to obtain relevant information for this literature review. First, a computer-based literature search was conducted in PsycINFO using all available databases. We limited the search to peer reviewed articles from the past five years. Next, we located articles through a citation search in the reference sections of previously collected articles. We included seminal articles that were heavily cited in the recent literature or that provided necessary contextual or methodological information. We also conducted an internet

search to locate materials specifically related to command climate or climate in the military, including military field manuals, doctrine, and training materials. Finally, we reviewed material provided by ARI regarding ARI and other military publications, training materials, and existing measures of military climate.

The organizational climate research literature is extensive, and many areas important in the private sector are not highly relevant to the Army context. However, our initial research into potential candidates for new command climate dimensions identified a large number of constructs that could potentially provide valuable information to Army commanders. As our objective was to identify additional topics of command climate in the literature to supplement the existing command climate measure, we first narrowed our review to cover specific areas of climate not already included in the existing ARI climate measure (described in Adis et al., 2020; see Table 1).

Table 1

Existing Army Command Climate Dimensions & Definitions

Climate dimension	Definition
1. Flow of information	Information that is important for the unit's success is communicated effectively throughout the unit.
2. Autonomy	Unit leadership trusts and empowers unit members to make decisions and solve problems when appropriate.
3. Leadership openness	Members of this unit feel they can approach unit leaders to discuss problems and concerns.
4. Respect for the individual	All members of the unit are treated with dignity and value regardless of rank, position, or background.
5. Hazing	Members of the unit intentionally cause new members to suffer or be exposed to activities that are cruel, abusive, humiliating, oppressive, demeaning, or harmful as a "rite of passage."
6. Bullying	Soldiers in the unit exclude or reject other Soldiers through cruel, abusive, humiliating, oppressive, demeaning, or harmful behavior.
7. Fairness	Outcomes, such as promotions, rewards, and developmental opportunities, are distributed to unit members in an objective and impartial manner.
8. Inclusion	Unit members feel integrated into unit activities.
9. Peer support for unit members	Members of the unit care about the well-being of other members and provide the support and assistance they need.
10. Leader support for unit members	Leaders in the unit care about the well-being of unit members and provide the support and assistance they need.
11. Leader support for families	Unit leaders care about the well-being of unit members' families and provide the support and assistance they need.
12. Performance orientation	Leaders and members of the unit encourage and strive for high performance outcomes.
13. Professionalism	The unit emphasizes the Profession of Arms, Army and unit standards, and adherence to rules, doctrine, and regulations.

Next, we identified climate constructs that had been successfully measured by the Army or other branches of the U.S. military. These measures are likely to contain constructs relevant to the military environment and would likely demonstrate reasonable levels of reliability and validity. Another strategy we used to narrow our focus in the literature review was to consider Army strategic policy and guidance. In their review of organizational climate literature, Zohar and Hofmann (2012) recommend that, “climate should be conceptualized and measured as domain specific, shared perceptions regarding key strategic initiatives of the organization” (p. 654). Thus, to identify constructs relevant to current Army strategic priorities, we consulted the 2015 Army Posture Statement, recent Sergeant Major of the Army statements, Army command policy, and the Army Leader Development Field Manual (FM 6-22; U.S. Department of the Army, 2015). Finally, we reviewed the organizational climate literature. One of the considerations in recommending a new climate construct was whether there was reliability and validity evidence to support its use. Based on our literature review, several constructs demonstrated reasonable levels of reliability and validity. In the next sections, we summarize the organizational climate literature for the most promising climate dimensions.

Review of Initial Climate Dimensions

In this section, we describe an initial set of climate dimensions that have potential to be relevant to the military and are conceptually independent from the previously developed dimensions of command climate. Where available, we provide construct definitions, describe measures, and present reliability and validity results for the measures.

Ethical Leadership. Army Doctrine Publication (ADP) 6-22 recognizes that “leaders are ethical standard-bearers for the organization, responsible for establishing and maintaining a professional climate wherein all are expected to live by and uphold the Army Values... Regardless of available expert assistance, the ultimate responsibility to create and maintain an ethical climate rests with the leader” (U.S. Department of the Army, 2019a, pp. 6-5). Integrity, one of the seven core Army Values, supports the notion that ethical leadership is critical to Army leadership.

As agents of the organization, leaders’ actions can influence subordinate behavior. The leader can enforce or fail to enforce policies and can interact with subordinates in such a way that ethical behavior is either promoted or discouraged within the unit (Wimbush & Shepard, 1994). Sama and Shoaf (2008) suggest that “ethical leaders inspire others in the organization to behave in similarly ethical ways” (p. 41). They further suggest that organizations can foster ethical leadership, but an ethical climate cannot be maintained without ethical leadership (Sama & Shoaf, 2008).

Ethical leadership is commonly defined as “the demonstration of normatively appropriate conduct through personal actions and interpersonal relationships, and the promotion of such conduct to followers through two-way communication, reinforcement, and decision making” (Brown et al., 2005, p. 120). Specifically, one way leaders set an ethical leadership climate involves rewarding ethical behavior and punishing unethical behavior at all levels of the organization for all employees with a sense of fairness and equality (Treviño et al., 2000).

One of the frequently identified antecedents of ethical climate is simply having an ethical leader as a role-model in the workplace (Weaver et al., 2005). This may create a *trickle-down* effect of ethical leadership, in which the ethical leadership of upper-management directly relates to the ethical leadership of lower-level supervisors (Mayer et al., 2009). Moreover, the relationship between upper management ethical leadership and lower-level follower outcome behaviors (counterproductive work behavior and organizational citizenship behavior) was found to be fully mediated by the ethical leadership of middle managers (Mayer et al., 2009). This research supports the notion of a trickle-down effect of ethical leadership, and thus the creation and perpetuation of an ethical leadership climate.

Several measures of ethical leadership have been developed, including the Ethical Leadership Scale (ELS) and the Ethical Leadership at Work Questionnaire (ELW). The ELS (Brown et al., 2005) was designed to capture perceptions of ethical leadership and has demonstrated good reliability ($\alpha = .92$). The ELW has seven factors that target various aspects of ethical leadership (people orientation, fairness, power sharing, role clarification, integrity, concern for sustainability, and ethical guidance; Kalshoven et al., 2011). This measure also demonstrated good reliability with scale reliabilities ranging from .84 to .94.

Ethical leadership climate, or lack thereof, can result in a wide range of outcomes. Follower ethical decision making and overall ethical climate are perhaps the most obviously valued outcomes of ethical leadership (Neubert et al., 2009). Similarly, ethical leadership can result in increased follower prosocial behaviors for the organization (Dirks & Ferrin, 2002) and decreased follower deviance or counterproductive work behaviors (CWBs; Brown & Treviño, 2006). Ethical leadership has demonstrated relationships with other outcomes, including CWBs (Mayer et al., 2009), organizational citizenship behavior (OCB; Avey et al., 2011), and workplace bullying and harassment (Einarsen, 1999). Moreover, followers of ethical leaders are more likely to have higher levels of job satisfaction, leader satisfaction, and organizational commitment (Brown et al., 2005).

Trust. Trust climate is related to unit members' evaluations of other members' past or present actions and interpretations of the future actions of other unit members (Brahm & Kunze, 2012). Trust climate is an especially important construct in risky and ambiguous situations, and as such, is particularly relevant to the Army. Specifically, a climate for trust is important to foster team cohesion, especially since cohesion is related to many outcomes of interest. For instance, researchers have found that unit cohesion is important for unit performance (Bass et al., 2003) and affective commitment to the Army (Charbonneau & Wood, 2018).

Measures of trust climate demonstrate reliability and validity evidence. Jarvenpaa and Leidner's (1999) measure of trust was originally developed for virtual teams and consists of eight items. In a later study, Brahm and Kunze (2012) used only four of the eight items and the scale showed good internal consistency with a Cronbach's alpha of 0.87. High levels of team trust climate are related to team members feeling more secure in investing in social relationships and actions with other team members, meaning team goals can better translate into desired outcomes, such as team cohesion (Brahm & Kunze, 2012). In climates of low team trust, "team members do not have the confidence that their colleagues act according to their team goals" and thus may not develop team cohesion (Brahm & Kunze, 2012, p. 606). Moreover, trust was one of the key

themes identified as related to effective Army command climate (Bullis & Reed, 2003) and is measured on the DEOCS and the CASAL.

Safety. Safety climate refers to the shared perceptions of the organizational policies, procedures and practices relating to safety in the workplace (Neal et al., 2000). It is important to note the difference between formal and enacted organizational safety policies. That is, formal policies are the official organizational safety policies developed by high-level leadership within an organization, whereas enacted policies refer to how these policies are actually implemented by lower-level leadership and employees (Zohar, 2003). Enacted policies are often more influential on employee behavior than official policies because they inform expected behavior–outcome contingencies more accurately (Zohar, 2003).

There are several valid and reliable measures of safety climate. Zohar (1980) constructed and validated a 40-item safety climate scale, which included measures of employee perceptions of management attitudes toward safety and effects of safety behavior on promotion and status within the organization, among other dimensions. Later, Zohar and colleagues developed a new measure to study safety climate at multiple levels in order to examine climate strength at the organization and work group levels (Zohar & Luria, 2005). The Multilevel Safety Climate Scale (MSC) is a 16-item organization-level questionnaire that assesses safety climate through leadership behavior. The MSC items cover three content themes: active practices (monitoring, enforcing), proactive practices (promoting learning, development), and declarative practices (declaring, informing; Zohar & Luria, 2005). The scale has good internal consistency with a Cronbach’s alpha of .95 (Zohar & Luria, 2005).

Safety climate has been shown to predict objective safety behavior (Johnson, 2007), safety engineering audit scores, and safety behavior observations (Zohar & Luria, 2005). Increased safety climate has also been associated with a decrease in the number of traffic violation tickets for employees who drive frequently as a part of their job (Naveh & Katz-Navon, 2014). Moreover, a 2010 meta-analysis by Beus and colleagues found that, of the most commonly measured safety climate dimensions, management commitment to safety is the most robust predictor of injuries. Safety is an important outcome for the Army, and safety incidents are monitored and tracked by unit leaders. Interest in preventing safety incidents underscores the importance of fostering a safety climate in the Army.

Learning Orientation. Army FM 6-22 recognized the importance of a climate of learning, stating, “a positive leadership climate encourages a learning environment” (U.S. Department of the Army, 2015, p. 3-3). Furthermore, learning and self-development has long been an important part of Army life. In 2015, Sergeant Major of the Army Dailey affirmed that, “Soldiers at all levels must embrace the expectation that developing their individual leadership skills, traits, and attributes is a personal responsibility” (Quality of Life in the Military, 2015).

Learning climate is a construct with a broad range of definitions. Some definitions focus on support, opportunities, and “space” for learning provided by the organization, while others emphasize opportunities to develop, access information, and connect to others (Nikolova et al., 2014). In an attempt to consolidate these definitions and address current measurement issues, Nikolova et al. (2014) defined learning climate as “employees’ perceptions of organizational

policies, and practices aimed at facilitating, rewarding and supporting employee learning behavior” (p. 259). They developed the Learning Climate Scale (LCS), a measure consisting of three core dimensions identified in the literature: facilitation, appreciation, and error avoidance. The measure demonstrated convergent validity with two validated scales of opportunities for learning. Learning climate is related to positive outcomes such as employees’ learning intentions, positive attitudes towards learning, and participation in learning activities (Nikolova et al., 2014). Further, research demonstrated that learning climate is an important predictor of innovative behavior and performance and has been shown to “counteract negative employee outcomes, such as turnover intentions and work stress, and increase positive outcomes such as job satisfaction” (Nikolova et al., 2014, p. 261).

Conflict Management. Army ADP 6-22 specifically addresses conflict management behaviors for Army leaders and provides leaders with guidance to “identify and resolve conflict before it affects personal and organizational functioning, good order and discipline, and cohesion” (U.S. Department of the Army, 2019a, p. 6-6). Several organizational researchers have recognized the importance of conflict management climate and have investigated this climate facet. For example, Ashraf and Rowlinson (2015) proposed three dimensions of conflict management climate: (1) rational reasoning, or the perceptions of structural variables that foster rational collaborative conflict management; (2) normative reasoning, or perceptions of organizational norms, collaborative expectations, and cohesiveness; and (3) emotional management. Way and colleagues (2016) focused on a different aspect of conflict management and measured leaders’ conflict handling style, including the dimensions of collaborating, yielding, and forcing. Their measures demonstrated good scale reliabilities ($\alpha = 0.97, 0.97$, and 0.98 , respectively). Further, different types of conflict handling styles were differentially related to anxiety, depression, bullying, and thoughts about submitting a claim for stress-related workers’ compensation. Einarsen and colleagues (2016) found their measure of conflict management climate was related to work engagement and fewer reports of bullying.

Affect management is closely related to conflict management. It is defined as the ability to regulate one’s own and others’ emotions (Mayer et al., 1999). Teams that are marked by a high level of self-directed affect management were less likely to rely upon avoidance conflict resolution ($r = -.23$) and more likely to use integrative conflict resolution (i.e., finding resolutions that benefit all parties, $r = .49$), and ultimately performed better ($r = .26$; Jordan & Troth, 2004). Further, Jordan and Troth (2004) found that teams marked by a high level of ability to manage others’ emotions were more likely to experience the dominating pattern of conflict resolution for intra-team conflict (i.e., a focus on winning the conflict, $r = .22$) as well as the integrative pattern of conflict resolution ($r = .20$).

Adaptability. Although there is no well-established definition of adaptability climate, a number of similar constructs have broadly agreed-upon definitions. Specifically, the construct of adaptability culture can inform our conceptualization of adaptability climate. It is important to note that culture is distinct from climate in that culture is built from the top down rather than the bottom up (Kozlowski & Klein, 2000). Organization founders and executives create an organization’s culture, which influences the shared beliefs and values of organizational members over time. In contrast, climate is a bottom up or emergent process stemming from the way organizational members perceive their work environment. Still, Ehrhart and colleagues (2013)

argued that, though they are distinct, “[the organizational climate and organizational culture literatures] can build on each other and be integrated in both research and practice” (p. 3). The two literature areas are particularly useful for informing the research and practice in each other because they both focus on a macro view of the organizational context, the role of leaders and leadership in creating the contexts, and the influence on organizational effectiveness (Ehrhart et al., 2013).

A recent synthesis of the extant research on adaptive organizational culture by Costanza and colleagues (2016) resulted in a comprehensive definition of adaptive culture. They defined adaptive culture as “a pattern of shared beliefs, values, and behaviors that indicate the organization is aware of and concerned about environmental changes and oriented toward agile and flexible action to address such changes” (p. 364). In their synthesis of adaptive culture research, Costanza et al. (2016) outline nine dimensions of adaptability, including external focus, anticipation of future problems or changes, confidence in the ability to adapt, openness to change, development of employees’ change-oriented knowledge, skills, and abilities (KSAs), collaborative action planning, ability to execute adaptive change, ability to sustain changes by creating reinforcing systems, and willingness to take risks. More concise measures of adaptability constructs do exist. For example, Gibson and Birkinshaw (2004) examined organizational ambidexterity, defined as “the capacity to reconfigure activities in the business unit quickly to meet changing demands in the task environment” (p. 209). Their study included a three-item adaptability scale in their measure of organizational ambidexterity.

Ployhart and Turner (2014) argue that adaptability climate is likely to have important consequences for organizational outcomes. Although no empirical studies have examined adaptability climate specifically, adaptability in general has a demonstrable impact on individual, team, and organizational outcomes, including improved ability to learn new skills (Shoss et al., 2012), performance amidst changing contexts or requirements (LePine, 2003), financial outcomes (Denison & Mishra, 1995; Gordon & DiTomaso, 1992; Raisch & Birkinshaw, 2008), and long-term organizational survival (Costanza et al., 2016). Furthermore, the need to develop adaptive leaders and the requirement for units to operate in a constantly changing environment has been recognized by Army leaders. Specifically, the 2015 Army Posture Statement contends, “we are making the Army more agile, adaptable and expeditionary than ever before.” (p. 7).

Behavioral Health. The 2016 Army Posture Statement reaffirmed the Army’s commitment to the health and well-being of Soldiers and their families and to providing comprehensive access to behavioral health care services. In the organizational literature, health climate has been defined as worker perceptions of active support from coworkers, supervisors, and upper management for employee physical and psychological well-being (Zweber et al., 2015). The Multi-Faceted Organizational Health Climate Assessment (MOHCA) was developed to provide a practical and useable health climate survey based on a clear definition of health climate (Zweber et al., 2015). The MOHCA consists of ten items that measure health climate at the workgroup, supervisor, and organizational levels (Zweber et al., 2015). Health climate has demonstrated significant incremental validity in predicting job stress, fatigue, and health days at work beyond safety climate, perceived support, and workgroup cohesion (Zweber et al., 2015). Zweber et al. (2015) found that health climate accounted for a significant amount of the variance

in job stress (6.1%), fatigue (5%), and burnout (2.5%). In the current study, we focused on behavioral health climate due to the Army's emphasis on this specific aspect of health.

Stress Management. ADP 6-22 suggests that leaders need to engage in behaviors to “identify at-risk Soldiers and intervene to help them” (p. 5-8) and notes that “studies also suggest a direct link between increased life stressors and increased high-risk behavior, so knowing subordinates well enough to understand when they are under increased stress is important” (U.S. Department of the Army, 2019a, p. 5-7). Learning to manage stress is especially imperative for occupations within the Army, as Soldiers often encounter demanding tasks but must maintain performance and readiness.

Newman and Beehr (1979) defined job stress as “a situation wherein job-related factors interact with the worker to change his or her psychological and/or physiological condition such that the person is forced to deviate from normal functioning” (p.1). A stress management climate would promote the utilization of stress management techniques for mitigating the negative impact of job stress on outcomes of interest. While we are not aware of literature that specifically addresses stress management as an organizational climate, several studies have looked at the influence of stress management interventions on outcomes of interest. Specifically, a meta-analysis on the influence of stress management interventions demonstrated that the interventions reduced stress and anxiety, while improving mental health and productivity (Richardson & Rothstein, 2008). Richardson and Rothstein (2008) evaluated the effectiveness of interventions at three levels: primary (e.g., job redesign to modify stressors), secondary (e.g., exercise, meditation, time management, goal setting), and tertiary (e.g., access to mental health professionals). A stress management climate involves leaders who educate unit members on their options for different interventions such as those listed above and promote the use of such interventions as a healthy way to deal with stress.

Innovation. Army leadership has recognized the importance of a climate of innovation to the Army's future. As stated in the 2015 Army Posture Statement, “encouraging innovation...is paramount to the Army's future” (p. 41). Organizational research into climates related to innovation include open innovation climate and creative climate. Open innovation climate describes a climate that encourages the open exchange of knowledge into and out of an organization to promote innovation (Remneland-Wikhamn & Wikhamn, 2011). Open innovation climate differs from traditional innovation climate due to its emphasis on innovation in an open system, where knowledge, ideas, and resources are exchanged across organizational boundaries (Lee et al., 2014; Remneland-Wikhamn & Wikhamn, 2011). Remneland-Wikhamn & Wikhamn (2011) developed the Open Innovation Climate Measure (OICM), measuring three dimensions: innovation/flexibility (openness to accepting new ideas, problem-solving strategies and work procedures, and support in the innovation process), outward focus (the extent to which the organization is responsive to outside organizations and customer demands), and reflexivity (a concern with reviewing objectives, strategies and work processes in order to adapt to the environment at large; Remneland-Wikhamn & Wikhamn, 2011). Research demonstrated that higher levels of open innovation climate (based on employee perceptions) correlated with higher levels of job satisfaction (Lee et al., 2014).

Closely related to open innovation climate, creative climate was defined as “the observed and recurring patterns of behavior, attitudes, and feelings that characterize creative life in the organization” (Isaksen & Akkermans, 2011, p. 165). It is important to note the distinction between *creativity*, which refers to the generation of new ideas, and *innovation*, which refers to the translation of these ideas into something useful to the organization (Hunter et al., 2007). In other words, creativity is necessary for innovation to occur. The Situational Outlook Questionnaire (SOQ) has been endorsed as one of the best current measures of creative climate (e.g., Hunter et al., 2007; Isaksen & Akkermans, 2011). The SOQ measures nine dimensions of creative climate (challenge/involvement, freedom, trust/openness, idea-time, playfulness/humor, conflict, idea-support, debate, risk-taking) and the subscales have been shown to have adequate internal consistency reliability ($\alpha = .71-.93$) over time (Isaksen & Akkermans, 2011).

A meta-analysis by Hunter et al. (2007) found that creative climate assessments demonstrated a sizeable relationship with creativity across studies. The authors additionally found a plethora of evidence indicating that organizational interventions based on climate assessments have helped organizations to increase creativity and innovation (Hunter et al., 2007). In other research, creative climate has demonstrated a positive relationship with outcomes such as higher sales volume, productivity, profitability, greater impact from implementing new social and technical systems, and improved ability to implement complex work designs (Isaksen & Akkermans, 2011).

In the Army, leaders are encouraged to model creative thinking and foster it in others in order to improve unit performance (ADP 6-22, U.S. Department of the Army, 2019a). Indeed, “innovative leaders reinforce team building by making everybody responsible for – and stakeholders in – innovation” (ADP 6-22, U.S. Department of the Army 2019a, p. 4-2). Further, leaders need to both foster and be able to rely upon “a creative staff to make quality decisions” (ADP 6-22, U.S. Department of the Army, 2019a, p. 9-6), particularly in the challenging and high operational tempo situations encountered in the Army.

Service to Country. Selfless service is one component of the Army Values. ADP 6-22 describes selfless service as putting the welfare of the nation, the Army, and your subordinates before your own (U.S. Department of the Army, 2019a). While there is no literature that we are aware of on a climate of service to country, such a dimension could be relevant to Army units. In the volunteerism literature, Nencini et al. (2016) argued that volunteers’ sense of belonging and commitment to their non-profit organization fosters a positive perception of the organizational climate, which in turn predicts intention to stay and length of voluntary service. If the same principles apply to service to country as to service to non-profits, it could be construed that a climate of service to country, stemming from perceptions of belonging and commitment to the Army, could predict retention in the Army and length of service.

Cross-Unit Collaboration. One of the identifying features of Army units is their level of interdependence. Army units exist within a hierarchical structure and collaboration across units is important to larger group operations. Cross-unit collaboration climate has not been identified in the organizational literature, but team researchers have examined shared perceptions of team interdependence. Perceptions of interdependence are equally important as objective interdependence and can help explain team processes and outcomes (van der Vegt et al., 1998).

These perceptions are derived from the distribution of skills and resources, how the team members complete their work, how goals are created and reached, and how performance (both individual and team level) is rewarded (Wageman, 1995; van der Vegt et al., 1998).

van der Vegt and colleagues (1998) developed a measure of perceived interdependence. The measure contained three subscales: received task interdependence (e.g., do your teammates depend on you?), initiated task interdependence (e.g., do you depend on your teammates?), and outcome interdependence (e.g., is your success tied to your teammates'?), all with acceptable reliabilities ($\alpha = .97, .94, \text{ and } .76$, respectively). Task and outcome interdependence significantly predicted a sense of responsibility for other team members' work, which in turn significantly predicted personal work outcomes, and then predicted satisfaction, motivation, and social satisfaction (van der Vegt et al., 1998). Additional research has linked interdependence to important team processes and outcomes (van den Bossche et al., 2006; van der Vegt et al., 2001).

Summary. Several climate dimensions are related to Army priorities, values, and leadership guidelines and many had measures that demonstrated evidence of reliability and validity. We identified a total of 11 dimensions of command climate from both organizational and military research. Once we identified the dimensions, the next step was to develop new items for measuring command climate. In the following section, we provide an overview of the single-item measurement approach and describe the steps to construct items to assess these climate dimensions.

Overview of Single-Item Measurement Approach

Most measurement scales rely on a set of multiple items to assess the construct of interest, minimizing measurement error by averaging multiple observations. However, multi-item scales can have drawbacks, including increased participant fatigue. Adis and colleagues (2020) describe three areas to consider to determine whether a single-item measure can provide a sufficient assessment of a construct. These areas include the composition of the construct being measured, practical issues (time, cost, application of the measure), and empirical evidence of reliability and validity. Highly abstract, complex, or multifaceted constructs are more likely to require multiple items to capture the construct accurately (e.g., Bergkvist & Rossiter, 2007; Fuchs & Diamantopoulos, 2009; Rossiter, 2002; Sackett & Larson, 1990). In terms of practical considerations, shorter, single-item measures minimize time and cost of administration and can allow for the measurement of more constructs than could be administered using multi-item scales (e.g., Bergkvist & Rossiter, 2007; Kwon & Trail, 2005). Finally, evidence suggests that single-item measures are reliable (e.g., Dolbier et al., 2005; Ginns & Barrie, 2004; Kwon & Trail, 2005; Wanous & Hudy, 2001; Wanous et al., 1997) and demonstrate predictive validity comparable to multi-item scales (e.g., Bergkvist & Rossiter, 2007). A detailed review of the single-item measurement approach can be found in Adis et al. (2020). The following section describes the development of measures for the new command climate dimensions and the identification of the final set of dimensions and items.

Creating Single-Item and Multi-Item Scale Assessments

In order to investigate the new command climate dimensions, a set of single items and multi-item scales were developed to assess each dimension. The literature review and Army publications served as a starting point for item development. The dimensions were initially selected to represent unidimensional, concrete constructs. However, even within these unidimensional constructs there were sometimes varying degrees of construct specificity or differences in the target (e.g., leader vs. peer behavior) that required additional refinement during item development. As items were written, alignment with the construct was evaluated such that content outside the core definition of the construct was removed from further development. Each dimension was represented by six to nine items. Items were carefully developed to assess shared perceptions and clearly specified the intended level of measurement (company-level units).

Once the multi-item scales were developed, a single item was either selected from the scale or newly developed to best represent the core unidimensional construct. The project team carefully considered and applied the recommended guidelines for single-item measure development. The resulting draft single-item measures and their dimensions are shown in Table 2. Because the items were specifically designed to reflect the unidimensional construct underlying the scale items, the single items also served as the definitions of the constructs.

Table 2

Initial Draft Definitions for the Army Command Climate Dimensions

Climate dimension	Definition
1. Ethical leadership	Unit leaders expect and encourage ethical behavior in our unit.
2. Trust	Members of this unit trust one another.
3. Safety	Unit members are committed to maintaining a safe work environment.
4. Learning orientation	Leaders encourage unit members to share their knowledge and experience to help each other learn and improve.
5. Conflict management	Unit members effectively manage conflict within the unit.
6. Adaptability	Unit members quickly adapt to changing situations or unexpected events.
7. Behavioral health orientation	Unit members are encouraged by leaders and other members of the unit to stay mentally healthy.
8. Stress management	Members of the unit deal with stress in a healthy and effective manner.
9. Innovation	Members of this unit develop new ideas and methods to improve unit performance.
10. Service to country	Unit members take pride in our service to our country.
11. Cross-unit collaboration	Unit leaders and members coordinate and collaborate with other units.

Creating a Follow-up Diagnostic Assessment

Diagnostic items are designed to provide additional information about potential areas of concern that are identified by the single-item command climate assessment. If potential problem areas are identified in one or more dimensions, the commander can investigate those dimensions further using diagnostic questions that are presented via a short questionnaire or in sensing sessions conducted by designated staff. Next, commanders can identify actions for change. The effectiveness of the actions can then be checked in a subsequent single-item command climate assessment as the process repeats. This diagnostic process enables commanders to conduct short “health” checks of command climate using the single items, spending additional time with the diagnostic only on those areas identified as potential problems.

An initial set of diagnostic items was created for each command climate dimension. Items that were identified as outside the core definition of the command climate dimension or that tapped into a specific aspect of the construct were used to form follow-up diagnostic items. Diagnostic items were intended to provide a comprehensive list of possible causes of problems in the underlying climate dimension. In most cases, diagnostic items specifically focused either on officer or non-commissioned officer (NCO) actions, but some also included unit member (E1-E4) behaviors. As an example, the trust single item is “Members of this unit trust one another.” Diagnostic items for this dimension are:

To what extent do **Officers** do the following?

- Earn unit members' trust.
- Follow through on their word.
- Have the unit's best interest at heart.

To what extent do **NCOs** do the following?

- Earn unit members' trust.
- Follow through on their word.
- Have the unit's best interest at heart.

To what extent do **Unit Members (E1-E4)** do the following?

- Earn unit members' trust.
- Follow through on their word.
- Have the unit's best interest at heart.

Soldiers are asked to respond using a 5-point Likert scale (e.g., ranging from *Not at all* to *a great extent*). An *N/A Don't Know* option was offered for each scale, as there are items for which enlisted Soldiers may be unaware of officer actions, and vice versa. The diagnostic items for each dimension can be seen in Appendix A.

The diagnostic items represent a formative measure, distinct from reflective measures like the multi-item scales. In other words, diagnostic items are not intended to be parallel to the single-item measures or multi-item scales in assessing the general underlying command climate construct. Instead, they are intended to explore unique aspects of the dimension and are intended to act as indicators of the cause of the climate dimension problem. There are many possible

causes for lower (or higher) scores in a particular command climate dimension, and it would be possible for a unit to be low on one diagnostic and high or moderate on another. For instance, a problem with trust climate may be revealed in unit members indicating that leaders “do not have the unit’s best interest at heart,” but members might also indicate that leaders do “follow through on their word.” This distinction has implications for the evaluation of the reliability and validity of these measures. Notably, internal consistency measures would not be expected to be high, and criterion-related validities would need to be examined for each item separately. The initial diagnostic items were considered preliminary, and we collected additional information during the focus groups (described in the next section of the report) to support further diagnostic item development.

Focus Group Review

After identifying 11 new dimensions and drafting items, we conducted focus groups to review the new dimensions, refine item content, and develop additional diagnostic items. Given the large number of dimensions represented from both the initial research project (Adis, et al., 2020) and the current effort, an additional goal of the focus groups was to reduce the number of new dimensions and identify those that were most important to establishing a positive unit climate and influencing unit performance.

We conducted focus groups with Soldiers at three TRADOC locations. These locations were selected to represent a variety of unit types in order to gather inclusive and broad perspectives across the Army and to ensure the proposed command climate dimensions would be equally relevant for different Army units. Each focus group built on the results of the previous one, such that dimensions were refined and items were developed, edited, or dropped after each focus group. A total of 76 active Army NCOs and officers participated in the focus groups with an average of 10.24 years of service. Soldiers’ last unit of assignment was primarily in Combat Arms units (51.4%), followed by Combat Support (35.1%), and Combat Service Support units (13.5%). Tables 3 and 4 provide the rank and military occupational specialty (MOS)/branch breakdown for the Soldiers who participated in the focus groups.

Table 3

Focus Group Participants by Rank

Rank	Frequency	Percent
SSG	22	28.9%
SFC	14	18.4%
MSG/1SG	1	1.3%
1LT	2	2.6%
CPT	37	48.7%
Total	76	100.0%

Table 4*Focus Group Participants by Military Occupational Specialty/Branch*

MOS Series	Frequency	Percent
11 – Infantry	15	19.7%
12 – Construction & Engineering	8	10.5%
13 – Field Artillery	1	1.3%
14 – Air & Missile Defense	1	1.3%
15 – Aviation	2	2.6%
19 – Armor	9	11.8%
31 – Military Police	8	10.5%
74 – Chemical, Biological, Radiological, & Nuclear (CBRN)	7	9.2%
88 – Transportation	6	7.9%
90 – Logistics	4	5.3%
91 – Mechanical Maintenance	7	9.2%
92 – Quartermaster	6	7.9%
Missing	2	2.6%
Total	76	100.0%

During the focus groups, Soldiers reviewed the 11 dimensions, single items, and multi-item scales. They provided edits to item content and wording and suggestions for additional items. Soldiers reviewed both the single items and multi-item scales and were asked if the single item best represented the dimension out of these items. Next, Soldiers discussed the importance and relevance of each dimension in setting command climate. Additionally, the researchers asked the Soldiers about the extent to which unit leaders would be able to act upon survey results to improve unit climate in that particular area. The last item was intended to generate discussion regarding unit leaders' ability to influence the factors that contributed to command climate in that area. The intent of the command climate survey is to provide feedback to allow unit leaders to create a positive unit climate. Thus, the survey should include only those areas over which unit leaders can exert control or influence within their units.

Following this discussion, Soldiers completed a rating task, rating each dimension on a 1 (low) to 3 (high) scale on the following:

1. *Importance*, the extent to which each dimension is important to understanding, assessing, and monitoring command climate;
2. *Relevance*, the extent to which each dimension is relevant in setting an effective command climate for the Soldier's type of unit (i.e., combat arms, combat support, combat service support); and
3. *Actionability*, the extent to which each dimension would enable company leaders to take action to improve command climate.

The results of the rating task are shown in Table 5. Ethical leadership and trust were rated highest on importance and relevance, followed by safety, stress management, and adaptability. Safety was rated highest on actionability, followed by ethical leadership, trust, stress management, and conflict management. Service to country, cross-unit collaboration, and innovation were consistently rated lowest on all three scales. Soldiers commented that service to country was particularly difficult for unit leaders to influence, and some indicated that this climate dimension may not be as strongly related to unit performance as other climate dimensions. Soldiers thought unit leaders would have a good understanding of cross-unit collaboration based on day-to-day unit activities and would not need a survey to assess this dimension. Further, junior Soldiers might not have the opportunity to observe collaboration across units. Soldiers' comments on innovation centered on the relevance across different types of Army units. Soldiers indicated that innovation may have a different meaning or varying importance depending on the type of Army unit. After the second focus group, the research team dropped the service to country, cross-unit collaboration, and innovation dimensions from the list of climate dimensions.

Table 5

Focus Group Ratings

	Importance		Relevance		Actionability	
	Mean	SD	Mean	SD	Mean	SD
1. Ethical leadership	2.82	0.45	2.71	0.54	2.48	0.69
2. Trust	2.91	0.37	2.86	0.42	2.38	0.73
3. Safety	2.58	0.64	2.49	0.69	2.70	0.59
4. Learning orientation	2.32	0.70	2.23	0.71	2.22	0.75
5. Conflict management	2.32	0.68	2.35	0.71	2.32	0.70
6. Adaptability	2.40	0.70	2.43	0.70	2.11	0.69
7. Behavioral health orientation	2.37	0.78	2.34	0.78	2.19	0.81
8. Stress management	2.49	0.67	2.47	0.73	2.35	0.69
9. Innovation	2.04	0.67	2.04	0.69	2.09	0.66
10. Service to Country	1.39	0.71	1.45	0.72	1.35	0.60
11. Cross-unit collaboration	1.76	0.85	1.72	0.77	1.93	0.85

Note. Ns range from 46-76. Innovation, service to country, and cross-unit collaboration dimensions were dropped after the second focus group.

We used the information obtained during the first two focus groups on the potential causes or indicators of problems within each climate dimension to further develop diagnostic items for each dimension. During the final focus group, Soldiers reviewed the diagnostic item content, providing feedback to clarify item content or suggest additional items to include for each dimension. For example, for the learning orientation dimension, Soldiers suggested adding, "Handle failures as opportunities to learn" as a diagnostic item. After the third focus group, project team members made final edits to the items. The final single items, multi-item scales, and diagnostic items are provided in Appendix A. With the final items defined, a validation study was conducted to evaluate evidence relating to the reliability and construct and criterion-related validity of the measures.

Method

We conducted a unit-based data collection in order to capture command climate data at the Army company level. The researchers collected data from 68 active U.S. Army companies across 11 military installations in the continental United States (CONUS) and outside the continental United States (OCONUS).

Participants

Participants in the study included 1,710 Soldiers and Officers in units across U.S. Army FORSCOM and OCONUS installations. Responses were considered valid and used in analyses if (1) the respondent completed at least 70% of the questionnaire, (2) tenure in the company was greater than one month, (3) the respondent answered at least 80% correct on seven questions designed to assess whether the respondents were paying attention to the questions, and (4) the respondent answered *NA/Don't know* to 25% or less of the items. Ten individuals did not complete at least 70% of the questionnaire and were therefore removed from the dataset. Of the remaining participants, 74 were removed because they had tenure within their company of less than one month. Two hundred and thirteen additional individuals were removed for not correctly answering at least 80% of the attention check questions. For the inclusion criterion involving *NA/Don't know* responses, participants were removed by dimension rather than by the individual, such that if a participant had more than 25% *NA/Don't Know* for a given dimension, ratings on items in that dimension were not analyzed for that individual. Thus, the final sample sizes for dimension ratings vary by dimension.

In addition to the individual-level inclusion criteria, we excluded entire companies if they had fewer than 10 participants complete the survey. Out of the 68 participating companies, 11 were excluded from analyses because they had fewer than 10 survey respondents. After excluding these companies, the final overall sample size was 57 companies and 1,358 individual respondents who provided usable data for analyses out of the 1,710 total individuals participating (79.42%).

Ranks ranged from PVT to MSG/1SG for enlisted Soldiers and from 2LT to CPT for officers. Additionally, six warrant officers participated. The frequency of each represented rank is presented in Table 6. Average tenure within the Army was 4.07 years ($SD = 4.82$), and average tenure within the company was 15.39 months ($SD = 13.00$). The sample consisted of 66.1% Combat Arms, 24.9% Combat Support, and 9.0% Combat Service Support. Table 7 provides a breakdown of the MOS representation.

Table 6*Sample by Rank*

Rank	Frequency	Percent
PV1	13	1.0%
PV2	145	10.7%
PFC	305	22.5%
CPL/SPC	476	35.1%
SGT	157	11.6%
SSG	115	8.5%
SFC	56	4.1%
MSG/1SG	2	.1%
CW2	3	.2%
CW3	3	.2%
2LT	18	1.3%
1LT	58	4.3%
CPT	4	.3%
Missing	3	.2%
Total	1358	100.0%

Table 7*Sample by Military Occupational Specialty/Branch*

MOS	Frequency	Percent
11 – Infantry	520	38.3%
12 – Construction & Engineering	318	23.4%
13 – Field Artillery	31	2.3%
15 – Aviation	44	3.2%
19 – Armor	131	9.6%
25 – Signal	31	2.3%
35 – Military Intelligence	34	2.5%
42 – Adjutant General	7	0.5%
68 – Medical & Emergency	19	1.4%
74 – Chemical, Biological, Radiological & Nuclear (CBRN)	5	0.4%
88 – Transportation	40	2.9%
91 – Mechanical Maintenance	123	9.1%
92 – Quartermaster	37	2.7%
94 – Electronic/Missile Maintenance	6	0.4%
Missing	12	0.9%
Total	1358	100.0%

In addition to the survey participants, 34 battalion commanders provided company-level ratings for 66 companies. Each commander rated between one and five companies, with an

average of two companies per commander. The majority of those providing these ratings were LTCs (20 out of 34, or 59%). Other ranks included two CSMs (6%), eight MAJ (24%), or were missing rank information (12%).

Measures

Similar to the approach used in previous command climate research (Adis et al., 2020), we collected data using three command climate measures.¹ These measures consisted of single items, multi-item scales, and diagnostic items for each of the eight identified dimensions of command climate listed in Table 5. In addition to the command climate assessments, criterion measures were obtained from published literature and administered with the command climate measures in order to assess criterion-related validity. Where appropriate, we aggregated individual responses to the company level to assess criterion-related validity. Respondents were asked to think about their company/troop/battery when statements referred to their “unit.”

Command Climate Multi-Item Scales

We measured the eight command climate dimensions with eight scales containing between six and nine items. The numbers of items for each dimension are shown in Appendix A. Participants responded to the items on 5-point Likert scales with anchors ranging from *Strongly Disagree* to *Strongly Agree*. In addition, we provided a *NA/Don't Know* option. Items are provided in Table A-1 in Appendix A, and scale reliabilities are provided in Table 11 of the Results section.

Command Climate Single-Item Measures

We developed single items to capture the dimension content using one concise and unidimensional item. Respondents were asked to indicate the extent to which they agreed with the description of their company provided in the single statement. Participants responded to the items on a 5-point Likert scale with anchors ranging from *Strongly Disagree* to *Strongly Agree*. In addition, a *NA/Don't Know* option was provided. The eight single items are listed in Table A-2 in Appendix A.

Command Climate Diagnostic Items

For the diagnostic assessment, most items asked specifically about actions taken by either officers or NCOs. However, the trust, conflict management, and adaptability diagnostic items also asked about actions taken by junior enlisted unit members (E1-E4). Participants responded to the items on a 5-point Likert scale with anchors ranging from *Not at all* to *A great extent*. In addition, a *NA/Don't Know* option was provided. Items are provided in Table A-3 in Appendix A.

¹ The climate measures developed by Adis et al. (2020) were not included in this wave of data collection. Ideally we would have been able to administer all of the climate measures in a single wave in order to better evaluate the convergent and discriminant validity of the measures, but this would have resulted in a very long survey leading to participant fatigue.

Criteria

Table 8 lists constructs identified as theoretically related to each command climate dimension and lists the outcome measure and the number of items. For the most part, the measures are ones that have been used or adapted from previous ARI research, including the Army Life Questionnaire (ALQ; Moriarty et al., 2009) and a measure of Army unit cohesion (Estrada et al., 2021). Additional measures were pulled from the literature (e.g., counterproductive work behavior, organizational citizenship behavior; Fox et al., 2012), or were adapted from other commonly used scales in the industrial/organizational psychology literature (e.g., engagement, job satisfaction). Because research was not available to identify outcomes for command climate dimensions empirically, outcomes were selected for each command climate dimension based on the conceptual definition of each dimension.

Table 8

Outcomes Associated with the Eight Command Climate Dimensions

Climate dimension	Correlate/outcome	Number of items
1. Ethical leadership	Affective commitment	4
	Continuance commitment	4
	Counterproductive work behaviors	5
	Disciplinary actions (BN CMDR)	1
	Satisfaction with unit leadership	1
	Unit performance (Soldiers)	4
	Unit performance (Officers)	4
	Unit performance (BN CMDR)	4
	Unit readiness (BN CMDR)	1
2. Trust	Cohesion	10
	Collective efficacy	4
	Mutual trust	2
	OCB	10
	Unit performance (Soldiers)	4
	Unit performance (Officers)	4
	Unit performance (BN CMDR)	4
	Unit readiness (BN CMDR)	2
3. Safety	Article 15s	1
	Disciplinary actions (BN CMDR)	1
	Safety incidents (Soldiers)	1
	Safety incident (BN CMDR)	1
	Stress (amount & impact)	4

Table 8, cont.*Outcomes Associated with the Eight Command Climate Dimensions*

Climate dimension	Correlate/outcome	Number of items
4. Learning orientation	Collective efficacy	4
	Job satisfaction	6
	Unit performance (Soldiers)	4
	Unit performance (Officers)	4
	Unit performance (BN CMDR)	4
	Unit readiness (BN CMDR)	2
	Unit training performance (BN CMDR)	1
	Work engagement	4
5. Conflict management	Cohesion	10
	Counterproductive work behaviors	5
	Article 15s	1
	Disciplinary actions (BN CMDR)	1
	Morale	2
	Withdrawal	6
6. Adaptability	Collective efficacy	4
	Mutual trust	2
	Unit resilience	4
	Unit performance (Soldiers)	4
	Unit performance (Officers)	4
	Unit performance (BN CMDR)	4
	Unit readiness (BN CMDR)	2
	Unit training performance (BN CMDR)	1
7. Behavioral health orientation	Morale	2
	Stress (amount & impact)	4
	Well-being	3
	Withdrawal	6
8. Stress management	Career intentions	3
	Disciplinary actions (BN CMDR)	1
	Stress (amount & impact)	4
	Well-being	3
	Withdrawal	6

Affective Commitment. Affective commitment is the degree to which a Soldier feels a personal attachment and sense of belonging to the Army (Gade et al., 2003). For example, one item asked Soldiers to rate how much they agreed with the statement, “I feel emotionally attached to the Army.” This outcome was measured with four items that were rated on a 5-point Likert scale with anchors ranging from *Strongly Disagree* to *Strongly Agree*. In addition, a *NA/Don’t Know* option was provided. The scale had a Cronbach’s alpha of .93.

Career Intentions. We measured a Soldier’s intention for completing his or her current term of service and continuing with a career in the Army with three items that were rated on a 5-

point Likert scale with anchors ranging from *Very Unlikely* to *Very Likely*. After reviewing the reliability results, we removed one item and retained two items for use in analyses. The two items had a correlation of .63. These items asked, “How likely is it that you will make the Army a career?” and “How likely is it you will leave the Army after completing your current term of service” (reverse-scored; Moriarty et al., 2009).

Cohesion. Cohesion measured Soldiers’ perceptions of how close the unit is, pride in being a member of the unit, and how well unit members work together as a team. This outcome was measured with 10 items adapted from Siebold and Kelly’s (1988) Platoon Cohesion Index (PCI) and Carless and De Paola’s (2000) version of the Group Environment Questionnaire (GEQ). For example, one item asked Soldiers to rate how much they agreed with the statement, “Members of my unit work together to get the job done.” Participants rated items on a 5-point Likert scale with anchors ranging from *Strongly Disagree* to *Strongly Agree*. In addition, a *NA/Don’t Know* option was provided. The scale had a Cronbach’s alpha of .94.

Collective Efficacy. The collective efficacy items measure the extent to which respondents perceive that their unit can effectively complete their assigned tasks. We used four items developed by an ARI working group to assess this construct. A sample item from this scale is, “I am confident that, as a unit, we can coordinate effectively with all members.” Participants rated the items on a 5-point Likert scale with anchors ranging from *Strongly Disagree* to *Strongly Agree*. In addition, a *NA/Don’t Know* option was provided. Cronbach’s alpha for the scale was .93.

Continuance Commitment. Continuance commitment involves the perceived costs/benefits associated with leaving the organization; individuals high on continuance commitment stay because the benefits of staying outweigh the costs of leaving. We measured this outcome using Gade et al.’s (2003) four-item scale. For example, one item asked Soldiers to rate how much they agreed with the statement, “I am afraid of what might happen if I quit the Army.” Participants rated the items on a 5-point Likert scale with anchors ranging from *Strongly Disagree* to *Strongly Agree*. In addition, a *NA/Don’t Know* option was provided. The scale had a Cronbach’s alpha of .90.

Counterproductive Work Behaviors. Counterproductive work behaviors (CWBs) are employee behaviors that undermine the goals and interests of an organization. We based our measure of CBSs on Spector et al.’s Counterproductive Work Behavior Inventory (Spector et al., 2010; Spector et al., 2006). We selected and modified five items to fit an Army context. The items ask respondents to provide ratings regarding the frequency that they have engaged in intentional behaviors that would impair the organization or others at work. A sample item is, “How often have you purposely wasted unit materials or supplies?” Participants rated the items on a 5-point Likert scale with anchors ranging from *Never* to *Always*. The scale’s Cronbach’s alpha was .86.

Disciplinary Actions & Article 15s. Soldiers self-reported whether they had received Article 15s in the last year and if so, the number of Article 15s received (Moriarty et al., 2009). Battalion commanders also provided a single company-level rating of the number of disciplinary

actions taken within the last three months to include Article 15s, Flag Actions, formal counselings, and placement on restrictions.

Job satisfaction. Job satisfaction measured the degree to which Soldiers were satisfied with their work and the opportunities they had on the job. For example, one item asked “How satisfied are you with the amount of challenge in your work?” This outcome was measured with six items that participants rated on a 5-point Likert scale with anchors ranging from *Very Unsatisfied* to *Very Satisfied*. These items have been used in the ALQ (Moriarty et al., 2009), and the scale had a Cronbach’s alpha of .93.

Morale. Morale refers to employees’ overall satisfaction, outlook, and attitudes toward their organization. We measured this construct with two items that asked, “How would you rate the level of morale in your unit?” and “How would you rate your current level of morale?” The two morale items correlated .74 with one another. Participants rated the items on a 5-point Likert scale with anchors ranging from *Very Low* to *Very High Amount*. Items came from a previous ARI Command Climate Survey (unpublished).

Mutual Trust. Mutual trust is the degree to which members of a unit trust one another. While related conceptually to cohesion, mutual trust focuses specifically on trust between members of the unit, while cohesion captures aspects such as unit pride, cooperation, and a sense of closeness between unit members. While somewhat similar to mutual trust, the climate trust dimension broadens the scope to include trust in unit leaders, a sense of confidence in unit members, and an expectation that unit members and leaders will follow through on their commitments. We measured mutual trust with two items that asked, “How much do members of your unit trust each other?” and “How much do members of your unit count on the other members of the unit?” The items in this scale came from Langfred’s (2004) measure, which was based on Simmons and Peterson’s (2000) mutual trust scale. The two mutual trust items correlated .74 with one another. Participants rated the items on a 5-point Likert scale with anchors ranging from *Not at All* to *To a Great Extent*.

Organizational Citizenship Behavior. Organizational citizenship behaviors (OCBs) are behaviors that go beyond the normal requirements of the job to support co-workers or the organization. OCBs were assessed using items from the short version of the Organizational Citizenship Behavior Checklist (OCB-C), a 10-item scale developed by Spector et al. (2010). We modified the items slightly so they were consistent with an Army environment. A sample item from the scale is, “How often have you helped a peer who had too much to do?” Participants rated the items on a 5-point Likert scale with anchors ranging from *Never* to *Every Day*. The 10-item scale had a Cronbach’s alpha of .91.

Safety incidents. Safety incidents are unintended events that disturb normal operations. We used two items to assess the number of safety incidents: one rated by Soldiers, and the other rated by battalion commanders or other battalion leadership. Soldiers were asked, “In the last three months, how many times has your unit had a safety incident of any type?” Battalion commanders were asked to estimate how many times each company in their command had a safety incident of any type with the last three months. The response scales for both the Soldier and battalion commander items used the same 5-point Likert scale with anchors ranging from 0

to 5 or more incidents. Soldier and battalion commander assessments of the number of safety incidents correlated at .23.

Satisfaction with unit leadership. We used a single item to assess Soldier satisfaction with their unit leaders. The project team developed the item, which asked, “How satisfied are you with your unit leadership?” Soldiers responded using a 5-point Likert scale with anchors ranging from *Very Unsatisfied* to *Very Satisfied*.

Stress. Stress is a feeling of emotional or physical tension. This scale consisted of four items, two of which measured Soldiers’ perceptions of the *amount* of stress they were experiencing at work and at home ($r = .47$). For example, one item asked, “How much stress, if any, are you experiencing now in your Army job?” Soldiers used 5-point Likert scales with anchors ranging from *None* to *Very High Amount*. The remaining two items measured the impact of stress or the *degree* to which they felt it was affecting their job performance and interpersonal relationships ($r = .74$). Items included, “Stress and emotional/personal issues have made it difficult for me to work.” Soldiers rated the items using 5-point Likert scales ranging from *Strongly Disagree* to *Strongly Agree*. Two of the items were from a previous ARI Command Climate Survey (unpublished), and two were developed as part of a previous ARI working group.

Unit Performance, Unit Readiness, and Unit Training Performance. Unit performance refers to the extent to which the unit performs tasks properly. Unit readiness refers to a unit’s capability to perform its missions, including preparation for performing duties and missions and preparation for performing training missions. Three sources provided unit ratings: Soldiers, and when available, company-level officers and battalion leaders. Battalion leaders also provided ratings of readiness and training performance. Soldiers rated their perceptions of how well the unit was performing in general, as well as in comparison to other units (Estrada et al., 2021). For example, one item asked Soldiers to rate how much they agreed with the statement, “This unit performs better than most.” Soldiers rated four items on a 5-point Likert scale with anchors ranging from *Strongly Disagree* to *Strongly Agree*. In addition, a *NA/Don’t Know* option was provided. The scale had a Cronbach’s alpha of .82.

Officers present at the data collections completed the same survey as other participants. In order to examine the unit performance ratings provided by officers, we selected the cases with officer and warrant officer ranks and calculated the mean of their responses for the unit. A total of 135 officers or warrant officers provided unit performance data. The scale had a Cronbach’s alpha of .79.

Battalion commanders provided ratings of company performance, readiness, and training performance on a separate survey. If battalion commanders were not available to participate, battalion executive officers or Command Sergeants Major provided ratings. Performance, readiness, and training performance were measured on 5-point Likert-type scales with anchors ranging from *Very Low* to *Very High* and *Strongly Disagree* to *Strongly Agree*, depending on the item. Items came from Estrada et al. (2021). Soldier ratings of unit performance correlated .60 with officer ratings and .05 with battalion commander ratings of unit performance. Officer ratings correlated .35 with battalion commander ratings of unit performance.

Unit Resilience. Unit resilience measured Soldiers' perceptions of how well the unit bounces back from adversity, conflict, and/or failure. We measured this outcome with four items (developed by an ARI working group) that asked respondents to provide ratings across three separate facets of resilience: adapt, recover, and grow. For example, one item asked Soldiers to rate how much they agreed with the statement, "My unit can effectively overcome tough work-related challenges." Participants rated the items on a 5-point Likert scale with anchors ranging from *Strongly Disagree* to *Strongly Agree*. In addition, a *NA/Don't Know* option was provided. The scale had a Cronbach's alpha of .91.

Well-Being. Well-being refers to the state of being comfortable, healthy, or happy. We assessed this construct by administering three items from the Satisfaction with Life Scale (Diener et al., 1985). For example, one item asked Soldiers to rate how much they agreed with the statement, "I am satisfied with my life." Participants rated the items on a 5-point Likert scale with anchors ranging from *Strongly Disagree* to *Strongly Agree*. The scale had a Cronbach's alpha of .89.

Withdrawal. Withdrawal measured how often Soldiers exerted low levels of effort, came to work late, or left work early (Estrada et al., 2021). For example, one item asked "How often have you gone to sick call to avoid work?" We measured this outcome with six items that were rated on a 5-point Likert scale with anchors ranging from *Never* to *Always*. The scale had a Cronbach's alpha of .89.

Work Engagement. Work engagement refers to the extent to which respondents are enthusiastic and excited about the job they perform. We assessed this construct with four items from Schaufeli and Bakker's (2010) Work Engagement Scale. A sample item from this scale is, "I am proud of the work I do." Participants rated the items on a 5-point Likert scale with anchors ranging from *Strongly Disagree* to *Strongly Agree*, and the scale had a Cronbach's alpha of .91.

Attention Check Questions. We included seven attention check items in the survey in order to assess whether participants were reading the questions carefully or rushing through the survey, answering in a random fashion. These items consisted of simple statements directing the respondent to mark a response for that question. We dichotomized these items into correct and incorrect answers based on whether the correct letter was chosen. Participants needed to answer 80% of these questions correctly for their data to be included in the analyses.

Results

Results are presented first for the eight command climate scales and single items, followed by results for the command climate diagnostic items. For the full command climate scales, we calculated internal consistency reliabilities and estimated single item reliabilities. Then we calculated ICCs to assess group-level effects. Following this, we present results for the evaluation of criterion-related validity of each dimension. In the diagnostic item section, we examine group-level effects with ICCs. We provide criterion-related validity evidence in the form of overall model fit from the regression of outcomes on the sets of diagnostic items.

Scales and Single Items

Appendix B presents the detailed item-level means, standard deviations, skewness, and kurtosis, including the single-item measures. In addition, we provide the percentage of respondents who indicated that the item was not applicable or for which they did not know the answer in the final column of the table in Appendix B. The percent *NA/I don't know* was below five percent in all cases. We provide multi-item scale-level means and standard deviations for the eight command climate dimensions with individual-level data in Table 9. See Table 10 for descriptive statistics for the single items. Distributions for both the scales and single items were generally non-normal, with all dimensions showing significant negative skew and five of the eight dimensions showing significant kurtosis. Negative skew is typical when using self-report data. While these distributions could potentially limit the correlations of these variables with outcomes, we conducted tests of normality on the aggregated data. The tests indicated that none of the scales and only the ethical leadership single item, deviated significantly from normal.

Table 9

Command Climate Dimension Scale Descriptive Statistics

	<i>N</i>	Mean	<i>SD</i>	Skewness		Kurtosis	
				Statistic	<i>SE</i>	Statistic	<i>SE</i>
Ethical leadership	1,337	3.89	0.99	-1.01	0.07	0.74	0.13
Trust	1,334	3.53	0.95	-0.44	0.07	-0.20	0.13
Safety	1,339	3.90	0.80	-0.73	0.07	0.71	0.13
Learning orientation	1,345	3.86	0.82	-0.74	0.07	0.71	0.13
Conflict management	1,313	3.56	0.89	-0.37	0.07	-0.20	0.13
Adaptability	1,331	3.95	0.79	-0.73	0.07	0.79	0.13
Behavioral health orientation	1,299	3.63	0.98	-0.52	0.07	-0.22	0.14
Stress management	1,318	3.52	0.87	-0.21	0.07	-0.33	0.13

Table 10

Command Climate Single Item Descriptive Statistics

	Mean	<i>SD</i>
Ethical leadership	4.24	1.02
Trust	3.52	1.12
Safety	3.98	0.88
Learning orientation	4.07	0.94
Conflict management	3.64	1.03
Adaptability	3.91	0.97
Behavioral health orientation	3.52	1.20
Stress management	3.47	1.18

We estimated initial reliabilities for the multi-item scales using Cronbach's alpha. Researchers often cite Nunnally's (1970) threshold of .70 for a minimum level of reliability. Cronbach's alphas were high for most dimensions; however, a few dimensions had items that were problematic for their respective scale. Since scale reliabilities impact the estimation of single-item reliabilities, we addressed problematic items by removing items with low-item total correlations from the scale. Item text can be found in Appendix A.

- We removed two items from the ethical leadership scale (Ethics6: "Leaders in my unit tend to overlook unethical conduct;" and Ethics7: "If unit members see unethical behavior, they report it to leadership"), and Cronbach's alpha improved from .87 to .93.
- We removed two items from the safety scale (Safety5: "Member of my unit often sacrifice safety in order to get the job done faster;" and Safety6: "Unit members only follow safety protocols when leaders are watching"), and the scale reliability improved from .87 to .93.
- We removed two items from the conflict management scale (ConfMgmt5: "Unit leaders allow conflict between unit members to get out of control;" and ConfMgmt6: "Unit members often have to rely on leadership to resolve disagreements"), and Cronbach's alpha improved from .79 to .83.
- We removed two items from the adaptability scale (Adapt2: "Leaders expect unit members to quickly respond to changing demands;" and Adapt6: "Members of my unit have difficulty coping with change"), and Cronbach's alpha improved from .83 to .87.
- We removed two items in the behavioral health orientation scale (BehHealth4: "Unit members believe their careers will suffer if they seek treatment for behavioral health issues;" and BehHealth5: "When unit members seek treatment for mental health issues, leaders hold it against them"), and the scale reliability improved from .84 to .88.

After these adjustments were made to the scales, final reliabilities ranged from .83 to .94 (shown in Table 11). To estimate single-item reliabilities, we applied the correction for attenuation formula (Nunnally & Bernstein, 1994, p.257) but rearranged it to solve for the reliability of the single item (Wanous & Hudy, 2001; Wanous et al., 1997). The correction for attenuation formula is used to estimate the true correlation between two variables after eliminating the influence of unreliability in both variables. The estimated true correlation ρ_{xy} , is equal to

$$\rho_{xy} = \frac{r_{xy}}{\sqrt{r_{xx} * r_{yy}}}$$

where r_{xy} is the observed correlation between x and y , r_{xx} is the reliability of x , and r_{yy} is the reliability of y . The variables x and y can be used to represent the scale and single item, respectively. Since the single item and scale are designed as parallel measures, the true correlation between these should be 1.00. Substituting 1.00 for ρ_{xy} above, we see that the numerator and denominator must be equal to each other such that

$$r_{xy} = \sqrt{r_{xx} * r_{yy}}$$

We rearranged the equation to solve for r_{yy} and to plug in obtained values for full scale reliability and the correlation between the full scale and the single items. The single-item reliability formula is

$$r_{yy} = \frac{r_{xy}^2}{r_{xx}}$$

where the variables are as defined previously.

Table 11 shows the final scale reliabilities, the number of final items for the eight command climate dimension scales, the correlation between the final full scales and single items, and the estimates of single-item reliabilities. Single-item reliabilities ranged from .57 for ethical leadership to .82 for stress management. The conflict management dimension scale showed the lowest observed scale reliability at .83. The ethical leadership dimension had a good scale reliability of .93 and a correlation with the single item of .73; however, these scores resulted in a single-item reliability estimate of only .57. Similarly, for adaptability, the dimension had a sufficient scale reliability of .87 and a correlation with the single item of .72; however, these scores resulted in a single-item reliability estimate of only .59.

Five of the dimensions showed moderately high correlations between single items and scales and adequate reliabilities for the scales; however, their single-item reliabilities did not reach traditional thresholds of .70 for adequacy. These dimensions were ethical leadership (.57), adaptability (.59), safety (.64), learning orientation (.66), and trust (.68). The remaining single items for the other three dimensions reached the threshold, with reliability estimates ranging from .73 to .82. In these cases, correlations between scales and single items were .79 or above and scale reliabilities were .83 or above.

Table 11

Command Climate Dimension Scale and Single-Item Reliabilities

Command Climate Dimension	Final Scale Cronbach's Alpha	Number of Items	Correlation Single Item with Scale	Single Item reliability
Ethical leadership	0.93	4	0.73	0.57
Trust	0.94	6	0.80	0.68
Safety	0.93	6	0.77	0.64
Learning orientation	0.86	5	0.76	0.66
Conflict management	0.83	4	0.79	0.75
Adaptability	0.87	4	0.72	0.59
Behavioral health orientation	0.88	4	0.80	0.73
Stress management	0.85	6	0.84	0.82

Company-Level Effects for the Full Scales and Single Items

Because command climate is conceptualized as a unit-level construct, we aggregated individual-level data to company-level scores and conducted validity analyses using company-level scores when appropriate. We examined intra-class correlations ($ICC(1)$ and $ICC(2)$; Bliese, 2000) to verify the appropriateness of the group-level measurement. $ICC(1)$ compares variability within units to variability across units, providing a percent of variance explained by the unit. According to LeBreton and Senter (2008), $ICC(1)$ shows evidence that group-level effects are present if values are .05 or higher. $ICC(1)$ should be sufficiently large to ensure that group-level analysis is appropriate (Bliese, 2000), and $ICC(2)$ should reach a cutoff of .80 to ensure that the group-level construct is reliable (van Mierlo et al., 2009).

The formulae used for $ICC(1)$ and $ICC(2)$ were

$$ICC(1) = \frac{MSc - MSw}{MSc + (K - 1)MSw}$$

$$ICC(2) = \frac{MSc - MSw}{MSc}$$

where MSc is the mean square between companies and MSw is the mean square within companies in a one-way, random effects ANOVA. K in the $ICC(1)$ formula is the average number of respondents per company, which in this case was 24. Table 12 shows the ICCs for responses to each dimension's scale and single item.

Table 12

Intra-Class Correlations for Full Scales and Single Items

		<i>ICC(1)</i>	<i>ICC(2)</i>
Ethical leadership	Scale	0.07	0.64
	Single item	0.03	0.45
Trust	Scale	0.10	0.73
	Single item	0.10	0.72
Safety	Scale	0.08	0.66
	Single item	0.09	0.69
Learning orientation	Scale	0.05	0.54
	Single item	0.04	0.49
Conflict management	Scale	0.09	0.68
	Single item	0.06	0.60
Adaptability	Scale	0.10	0.72
	Single item	0.09	0.69
Behavioral health orientation	Scale	0.06	0.58
	Single item	0.04	0.51
Stress management	Scale	0.07	0.65
	Single item	0.05	0.55

Note. All $ICC(1)$ values significant at $p < .05$.

All of the *ICC(1)* statistics were statistically significant at the $p < .05$ level. Most of the *ICC(1)s* reached the .05 threshold identified by LeBreton and Senter (2008) as indicative of a group-level effect. Only the single-item measures for ethical leadership, learning orientation, and behavioral health orientation did not reach this level. The full scales for trust and adaptability showed medium group effects (.10 or greater; see Murphy & Myors, 1998, p. 47), as did the single-item measure for trust.

The initial threshold established for *ICC(2)* was .80; however, none of the observed *ICC(2)s* reached this level. While most *ICC(2)* statistics reached the .60 level, there were a few that were much lower. For example, the single-item measure for ethical leadership had the lowest *ICC(2)* value at .45. This suggests that the mean value for ethical leadership, as measured by the single item, is not a reliable index of company standing on the ethical leadership construct. As such, individual responses within the company differ substantially from person to person; thus, the single item should not be used to draw inferences at this time. The group-level effect of the ethical leadership single item was small ($ICC(1) = .03$), suggesting that there was disagreement within companies on this item. The behavioral health orientation and learning orientation scales and single items showed small to medium group-level effects based on *ICC(1)*, but *ICC(2)* was low, between .49 and .58.

Since this research is in the early stages of development for scale and single-item measures, and group-level effects were detected on all *ICC(1)*, we lowered the *ICC(2)* threshold for aggregation to .65. This is slightly below the .70 to .85 range LeBreton and Senter (2008) cite as adequate for early stages of scale development. This seemed appropriate due to the likely impact of other, unmeasured nested group effects and the preliminary nature of the single-item measures. Table 13 lists the constructs that were subsequently identified as demonstrating adequate ICCs for aggregation.

Table 13

Command Climate Dimensions with Adequate Intra-class Correlation Coefficients (ICCs) for Aggregation

	<i>ICC(1)</i> = .05+ for full scale	<i>ICC(1)</i> = .05+ for single item	<i>ICC(2)</i> for full scale = .65+	<i>ICC(2)</i> for single item = .65+
Ethical leadership	☑	X	*	X
Trust	☑	☑	☑	☑
Safety	☑	☑	☑	☑
Learning orientation	☑	X	*	X
Conflict management	☑	☑	☑	X
Adaptability	☑	☑	☑	☑
Behavioral health orientation	☑	X	X	X
Stress management	☑	☑	☑	X

Note. ICC = Intra-class correlation coefficient, ☑ = ICC reached threshold, X = ICC did not reach threshold, * = measure had high agreement ($r_{wg(j)}$)

As LeBreton and Senter (2008) discuss, $ICC(2)$ might be low because of low interrater consistency, low interrater agreement, or both. Furthermore, scores can have low agreement and high consistency or high agreement and low consistency (LeBreton et al., 2003). Level of agreement can also be tested using a within-group correlation, $r_{wg(j)}$ (James, 1982; James et al., 1984). Therefore, for the measures that did not reach .65 on $ICC(2)$, we examined interrater agreement with r_{wg} and $r_{wg(j)}$ statistics. The single-item r_{wg} and multi-item $r_{wg(j)}$ statistics provide estimates of interrater agreement. The $r_{wg(j)}$ provides a measure of the interchangeability of raters by comparing observed variance in ratings to a hypothetical expected variance that should be obtained if the raters completely disagreed. It provides an estimate of the interrater agreement of a group (or in this case, a company). The observed variance in ratings was compared to a uniform null distribution and a slightly skewed distribution reflecting random responding and leniency/strictness, respectively. A triangular distribution reflecting central tendency in responding might also be appropriate, but since expected variances for slightly skewed distributions and triangular distributions are similar (1.34 for slightly skewed, 1.32 for triangular; see LeBreton & Senter, 2008), r_{wgs} were only calculated for the slightly skewed distribution. These agreement statistics are provided in Table 14.

Table 14

Average Interrater Agreement Statistics

	Random null		Slightly skewed null	
	Avg $r_{wg(j)}$ for scale	Avg r_{wg} for single item	Avg $r_{wg(j)}$ for scale	Avg r_{wg} for single item
Ethical leadership	.71	.51	-1.05	-.10
Trust	.82	.45	.34	-.22
Safety	.88	.65	.83	.23
Learning orientation	.82	.57	2.13	.05
Conflict management	.74	.51	.21	-.10
Adaptability	.85	.58	.65	.07
Behavioral health orientation	.63	.32	-.15*	-.51
Stress management	.76	.35	.47	-.45

Note. Avg = Average. *The $r_{wg(j)}$ for one company with an extreme value was removed to compute the average.

Using the commonly applied cut-off of .70, all of the dimension scale scores except behavioral health orientation reached the threshold. Agreement was moderately high on scales for a few dimensions, including ethical leadership (.71), conflict management (.74), and stress management (.76), but the behavioral health orientation scale had low agreement (.63). Ethical leadership and learning orientation had moderately high agreement, but low interrater consistency on full scale measures, suggesting that scores on these climate dimensions were range restricted and differences between groups were truncated (see LeBreton & Senter, 2008).

There were eight out-of-range $r_{wg(j)}$ and r_{wg} values (greater than 1 or less than 0) for the assumed slightly skewed null distribution. Out-of-range values occur when the observed variance exceeds the theoretical null variance (LeBreton & Senter, 2008). According to LeBreton & Senter (2008), there are at least three different explanations for out-of-range $r_{wg(j)}$ and r_{wg} values.

First, sampling error can cause out-of-range values. Typically, sampling error would cause small negative values (e.g., r_{wg} between -.20 and .00; LeBreton et al., 2005), and the assumption is that with a larger number of Soldiers rating the items for each unit, the values would stabilize and conform to the typical range for r_{wg} and $r_{wg(j)}$ values. Second, a misspecified underlying distribution can result in out-of-range $r_{wg(j)}$ and r_{wg} values. For instance, if the underlying distribution is uniform, but we calculate the $r_{wg(j)}$ and r_{wg} values based on an assumed slightly skewed null distribution, the estimate of error variance would be downwardly biased and the resulting $r_{wg(j)}$ and r_{wg} values would be negative (LeBreton & Senter, 2008). Third, companies with systematic disagreement may result in a bimodal distribution, which would cause out-of-range $r_{wg(j)}$ and r_{wg} values. Specifically, there could be multiple different true scores on a scale for a company based on different subgroups (LeBreton & Senter, 2008). LeBreton and Senter (2008) recommend that suspected bimodal distributions should be identified *a priori* in order to use the appropriate alternative calculation (r_{wgp}) and avoid capitalizing on chance.

Of the dimensions low on *ICC(2)*, single-item measures had average r_{wg} ranging from .32 to .57 suggesting there was considerable disagreement within companies. For behavioral health orientation, the low single-item agreement confirmed low scale agreement. For this dimension, aggregation to the company level may not be appropriate until the scale and single-item measures are refined. For ethical leadership, learning orientation, conflict management, and stress management, the full scales had sufficient agreement and consistency, but the single items did not. For these dimensions, we examined relationships with the criteria for the full scales but not for the single-item measures. Table 15 presents the company-level scale descriptive statistics, and Table 16 presents the company-level single-item descriptive statistics. Appendix B presents the intercorrelations among scale dimensions (Table B-2) and single items (Table B-3).

Table 15

Command Climate Scale Descriptive Statistics at Company-Level

	Mean	SD	Skewness		Kurtosis	
			Statistic	SE	Statistic	SE
Ethical leadership	3.88	0.34	-0.51	0.32	0.02	0.62
Trust	3.52	0.37	0.02	0.32	-0.69	0.62
Safety	3.90	0.28	0.13	0.32	-0.30	0.62
Learning orientation	3.86	0.25	0.12	0.32	-0.46	0.62
Conflict management	3.57	0.33	0.20	0.32	-0.43	0.62
Adaptability	3.95	0.30	-0.30	0.32	-0.18	0.62
Behavioral health orientation	3.65	0.31	-0.32	0.32	-0.48	0.62
Stress management	3.53	0.29	0.10	0.32	-0.74	0.62

Note. $N = 57$; SD = Standard deviation; SE = Standard error.

Table 16*Command Climate Single-Item Descriptive Statistics at Company-Level*

	Mean	SD	Skewness		Kurtosis	
			Statistic	SE	Statistic	SE
Ethical leadership	4.25	0.29	-0.73	0.32	0.59	0.62
Trust	3.51	0.43	0.12	0.32	-0.69	0.62
Safety	3.99	0.31	-0.54	0.32	1.02	0.62
Learning orientation	4.08	0.28	-0.06	0.32	-0.67	0.62
Conflict management	3.65	0.35	-0.21	0.32	0.10	0.62
Adaptability	3.91	0.35	-0.21	0.32	-0.52	0.62
Behavioral health orientation	3.54	0.37	0.37	0.32	0.36	0.62
Stress management	3.48	0.36	-0.09	0.32	-0.90	0.62

Note. $N = 57$; SD = Standard deviation; SE = Standard error.

Construct Validity of Command Climate Scales

In order to establish the validity of the command climate assessments, evidence was examined to determine whether the dimensions could be distinguished from each other. Intercorrelations among the climate dimensions provide some evidence that the dimensions are capturing different underlying constructs (see Appendix B, Table B-2). The average intercorrelation in the individual-level data was .60 in magnitude, and the correlations ranged in strength from .42 to .78. Correlations were much stronger in the company-level data. The average intercorrelation was .78, and intercorrelation ranged in strength from .57 to .91. Trust, conflict management, adaptability, learning orientation, and stress management were more highly correlated with one another, indicating there may be some construct overlap at the company level. Ethical leadership and behavioral health orientation had relatively lower intercorrelations with one another and with other constructs.

Next, exploratory factor analyses (EFA) were conducted to examine the relationships among dimensions and identify any higher order structure that may exist in the data. We used the full scales for this rather than the single items. With 57 companies, our sample size was not sufficient to conduct an EFA on the company-level data; therefore, we conducted the analyses at the individual level using principal axis factoring with oblique promax rotation.

In the individual-level data, a scree plot of the eigenvalues showed one large factor that accounted for most of the variance. However, examination of the eigenvalues indicated that seven factors had eigenvalues greater than one, suggesting seven underlying factors in the data. Taken together, this shows overlap among the factors, but there is distinction between the factors. We present the factor loadings in Appendix B Table B-4. The scale items for safety, learning orientation, trust, ethical leadership, adaptability, and conflict management each loaded on their own factors (Factors 2, 3, 4, 5, 6, and 7, respectively). The remaining factor was comprised of items from more than one scale. Factor 1 had high loadings from behavioral health, moderate loadings from stress management, a weak loading from one of the positively worded

learning orientation items (which also loaded on the Factor 3 with the other learning orientation items), and a weak loading from one of the positively worded adaptability items (which also loaded on the Factor 5 with the other adaptability items). One reverse coded conflict management item failed to load any factors. Communalities after extraction averaged .66 across all items. The communalities reflect the proportion of the variable's variance that is explained by the factors. They ranged from .25 to .82. These are also in Appendix B Table B-4.

The results of the EFA demonstrate distinct factors for safety, learning orientation, trust, ethical leadership, adaptability, learning orientation, and conflict management, with no cross-loading of items from other scales. This suggests the distinctiveness of these scales. The other factor consisted of items that cross-loaded from different scales, suggesting some level of overlap that should be investigated further. While the seven factors were intercorrelated, the average correlation between factors was .60, and ranged from .40 – between Factor 4 (trust) and Factor 5 (ethical leadership) – to .73 – between Factor 1 (behavioral health orientation & stress management) and Factor 7 (conflict management). Appendix B Table B-5 contains a table of factor correlations.

Criterion-Related Validity of Command Climate Dimension

Trust, safety, conflict management, adaptability, and stress management all had satisfactory *ICC(1)* and sufficient *ICC(2)* levels for the full scales under the lowered threshold in order to justify aggregation. Ethical leadership was very close to the *ICC(2)* threshold of .65 and demonstrated good *ICC(1)* and good average agreement (r_{wg}). In order to evaluate criterion-related validity, we conducted two simple regressions and one hierarchical regression for each examined relationship. In one simple regression, we regressed the outcome on the full scale predictor; in the other, we regressed the outcome on the single-item predictor. This provided estimates of regression weights without the influence of collinearity between the full scale and single-item predictors that would occur in a multiple regression. In the hierarchical regression, we entered the single item first, and examined the incremental R^2 change from adding the full scale. This analysis provided an indication of whether the full scale accounts for additional variance in the outcomes, above and beyond the single item. See Table 8 (pp. 23-24) for a list of the outcomes tested for each climate dimension.

Ethical leadership, trust, learning orientation, conflict management, and stress management reached the ICC (and/or r_{wg}) thresholds for the full scale, but not the single items. Regression analyses for these dimensions were conducted only for the full scales. Behavioral health orientation did not reach the *ICC(2)* or r_{wg} threshold, so we did not aggregate them to the group level. Thus, we conducted the regressions for behavioral health orientation at the individual level.

Since multiple inferences are being drawn from the same data, there is an elevated risk of finding significant results just by chance. A common approach to combating this risk (known as alpha inflation), is to use a correction, such as the Bonferroni correction, which divides the critical alpha level by the number of hypotheses. However, in many circumstances, this approach leads to exceedingly conservative correction. In order to minimize family-wise alpha inflation without overly inflating beta, we set the critical alpha level to be .05 divided by the number of

dependent variables for each climate dimension. The alpha levels used for each dimension are listed in Tables 17 to 19.

Safety

Safety climate was examined as a predictor of six outcome variables: article 15s, disciplinary actions (battalion commander-rated), safety incidents (battalion commander-rated), safety incidents (Soldier), and stress impact, and stress amount. Safety was a strong predictor of safety incidents (Soldier) and stress impact. Although both the single item and scale had significant relationships with these outcomes, in both cases, the full scale did not produce a significant increase in R^2 over the single item. Results for safety climate are presented in Table 17.

The single item for safety predicted around a quarter of the variance for safety incidents (Soldier; adjusted $R^2 = .22$, $F(1, 51) = 16.83$, $p = .001$) and stress impact (adjusted $R^2 = .26$, $F(1, 51) = 20.96$, $p < .001$), suggesting strong relationships between these variables and safety climate. Adding the scale to the single item did not add a significant amount of variance to safety incidents (Soldier; change in $R^2 = .00$, $F(1, 54) = .01$, $p = .94$) or stress impact (change in $R^2 = .02$, $F(1, 54) = 1.43$, $p = .24$). As for stress amount, the standardized regression weights were $-.30$ and $-.48$ for single item and scale, respectively. In a hierarchical regression, the single item did not account for a significant percent of variance in stress amount (adjusted $R^2 = .07$, $F(1, 55) = 5.29$, $p = .03$) using the predetermined critical alpha level of $p = .008$, though the scale did contribute significantly to the percent of the variance (change in $R^2 = .21$, $F(1, 54) = 16.48$, $p < .001$). For the remaining three outcomes, neither the safety single item nor scale were significant predictors. The adjusted R^{2s} for the second step of the hierarchical regressions including the single item and scale were $-.02$ ($F(2, 54) = 0.50$, $p = .65$) for article 15s, $.00$ ($F(2, 51) = 0.93$, $p = .65$) for disciplinary actions, and $-.02$ ($F(2, 50) = 0.43$, $p = .56$) for safety incidents (battalion commander).

Table 17

Safety Simple and Hierarchical Regression Results

	Article 15s	Disciplinary actions [†]	Safety incidents [†]	Safety incidents (Soldier)	Stress amount	Stress impact
Safety SI β -weight	-.12	-.06	-.10	-.48*	-.30	-.53*
Safety scale β -weight	-.08	.03	-.13	-.43*	-.48*	-.53*
SI model adjusted R^2	.00	-.02	-.01	.22*	.07	.26*
SI + scale model R^2 change	.00	.03	.01	.00	.28*	.02

Note. * $p < .008$, [†]Variable was rated by the battalion commander, SI = Single item. All β -weights are standardized

Adaptability

The adaptability dimension of command climate was examined as a predictor of collective efficacy, mutual performance, unit resilience, unit performance (Soldier ratings, officer ratings, and battalion commander ratings), unit readiness, and unit training performance (battalion commander ratings). Adaptability climate was a predictor of five of the eight outcomes (see Table 18).

The adaptability climate single item showed a significant positive relationship with collective efficacy (adjusted $R^2 = .70$, $F(1, 55) = 134.47$, $p < .001$). Although adding the scale to the regression significantly increased the predicted variance in collective efficacy, the change was relatively small (R^2 change = .04, $F(1, 54) = 9.30$, $p = .004$). The β weight for the single item was .84, while the β weight for the scale was .85. Similarly, the adaptability single item accounted for a substantial proportion of variance in mutual trust (adjusted $R^2 = .77$, $F(1, 55) = 193.07$, $p < .001$), unit resilience (adjusted $R^2 = .63$, $F(1, 55) = 95.99$, $p < .001$), and Soldier-rated unit performance (adjusted $R^2 = .62$, $F(1, 55) = 93.44$, $p < .001$). Still, the full scale accounted for a significant amount of additional variance in the outcomes (R^2 change = .05, .09, .05, respectively).

The adaptability single item had a positive, significant relationship with officer-rated unit performance (adjusted $R^2 = .23$, $F(1, 55) = 14.90$, $p < .001$). The full scale did not contribute incremental prediction above and beyond the single item (R^2 change = .01, $F(1, 44) = .56$, $p = .46$). The standardized regression coefficient for the single item was .50, while the standardized regression coefficient for the scale was .49. Adaptability climate did not predict the outcomes rated by battalion commanders. The adjusted R^2 for the scale and single item was .00 ($F(2, 51) = 1.02$, $p = .37$) for unit performance, -.03 ($F(2, 51) = .31$, $p = .74$) for unit readiness, and -.03 ($F(2, 51) = .20$, $p = .82$) for training performance.

Table 18*Adaptability Simple and Hierarchical Regression Results*

	Collective efficacy	Mutual trust	Unit resilience (Soldier)	Unit performance (Soldier)	Unit performance (officer)	Unit performance [†]	Unit readiness [†]	Unit training performance [†]
Adaptability SI β -weight	.84*	.88*	.80*	.79*	.50*	-.14	-.03	-.03
Adaptability scale β - weight	.85*	.89*	.85*	.82*	.49*	-.07	.03	.01
SI model adjusted R^2	.70*	.77*	.63*	.62*	.23*	.00	-.02	-.02
SI + scale model R^2 change	.04*	.05*	.09*	.05*	.01	.02	.01	.01

Note. * $p < .006$, [†]Variable was rated by the battalion commander, SI = Single item. All β -weights are standardized

Ethical Leadership, Trust, Learning Orientation, Conflict Management, and Stress Management

The ethical leadership, trust, learning orientation, conflict management, and stress management dimensions of command climate showed sufficient agreement for the full scale, but not for the single-item measures. Therefore, for these dimensions, we examined criterion related validity evidence for the scales only. The outcomes tested for each dimension are listed in Table 8 (p. 23-24).

Ethical Leadership. The ethical leadership dimension was examined as a predictor of affective commitment, continuance commitment, CWB, disciplinary actions (battalion commander ratings), satisfaction with unit leadership, unit performance (Soldier, officer, and battalion commander ratings), and unit readiness (battalion commander ratings). Ethical leadership was significantly related to affective commitment with a standardized regression weight of .58 (adjusted $R^2 = .33$, $F(1, 55) = 27.90$, $p < .001$). In predicting leader satisfaction, the scale for ethical leadership was a significant predictor (adjusted $R^2 = .52$, $F(1, 55) = 60.85$, $p < .001$), and the standardized regression weight was .73. The ethical leadership scale was a significant predictor of unit members' unit performance ratings (adjusted $R^2 = .51$, $F(1, 55) = 58.69$, $p < .001$) with a standardized regression weight of .72. Similarly, in predicting officers' unit performance ratings, the scale for ethical leadership was a significant predictor (adjusted $R^2 = .16$, $F(1, 45) = 9.90$, $p = .003$) with a standardized regression weight of .43. However, the ethical leadership scale was not significantly related to continuance commitment (adjusted $R^2 = -.02$, $F(1, 55) = .00$, $p = .98$), CWB (adjusted $R^2 = .06$, $F(1, 55) = 4.46$, $p = .04$), disciplinary actions (rated by the battalion commander; adjusted $R^2 = -.01$, $F(1, 52) = .29$, $p = .59$), unit performance (rated by the battalion commander; adjusted $R^2 = .04$, $F(1, 52) = 3.26$, $p = .08$), and unit readiness (rated by the battalion commander; adjusted $R^2 = .00$, $F(1, 52) = 1.10$, $p = .30$) using the predetermined critical alpha level of .006.

Trust. The dimension of trust was used to predict cohesion, collective efficacy, mutual trust, OCB, unit performance (as rated by Soldiers, officers, and the battalion commander), and unit readiness (rated by the battalion commander). The trust scale was significantly related to cohesion with a standardized regression weight of .88 (adjusted $R^2 = .77$, $F(1, 55) = 186.24$, $p < .001$). Trust was positively related to collective efficacy with a standardized regression weight of .89 (adjusted $R^2 = .78$, $F(1, 55) = 202.33$, $p < .001$). The trust scale was also strongly related to mutual trust with a standardized regression weight of .87 (adjusted $R^2 = .75$, $F(1, 55) = 168.77$, $p < .001$). Trust was significantly related to OCB with a standardized regression weight of .46 (adjusted $R^2 = .20$, $F(1, 55) = 14.92$, $p < .001$). The trust scale was positively related to unit performance rated by Soldiers ($\beta = .83$, adjusted $R^2 = .69$, $F(1, 55) = 124.98$, $p < .001$) and officers ($\beta = .51$, adjusted $R^2 = .24$, $F(1, 45) = 15.77$, $p < .001$). The trust scale was not significantly related to battalion commander ratings of unit performance (adjusted $R^2 = -.02$, $F(1, 52) = .18$, $p = .67$) or unit readiness (adjusted $R^2 = -.02$, $F(1, 52) = .04$, $p = .85$) using the predetermined critical alpha level of .006.

Learning Orientation. The learning orientation dimension was examined as a predictor of collective efficacy, job satisfaction, unit performance (Soldier, officer, and battalion commander ratings), unit readiness (battalion commander ratings), unit training performance

(battalion commander ratings), and engagement. Learning orientation was a strong predictor of four of the examined outcomes (collective efficacy, job satisfaction, unit performance rated by unit members and officers, and engagement). In the simple regression of collective efficacy on learning orientation, the scale predicted significant variance with a standardized regression weight of .80 (adjusted $R^2 = .64$, $F(1, 55) = 100.49$, $p < .001$). The learning orientation scale was significantly related to job satisfaction with a standardized regression weight of .73 (adjusted $R^2 = .53$, $F(1, 55) = 63.55$, $p < .001$) and engagement with a standardized regression weight of .65 (adjusted $R^2 = .41$, $F(1, 55) = 39.45$, $p < .001$). The learning orientation scale was related to Soldier-rated unit performance with a standardized regression weight of .74 (adjusted $R^2 = .54$, $F(1, 55) = 66.40$, $p < .001$). The learning orientation scale also accounted for a significant proportion of variance in the unit performance ratings by officers with a standardized regression weight of .42 (adjusted $R^2 = .16$, $F(1, 45) = 9.58$, $p = .003$). The learning orientation scale did not significantly predict battalion commander-rated unit performance (adjusted $R^2 = -.02$, $F(1, 52) = .02$, $p = .90$), readiness (adjusted $R^2 = -.02$, $F(1, 52) = .02$, $p = .89$), or training performance (adjusted $R^2 = -.01$, $F(1, 52) = .25$, $p = .62$) using the predetermined critical alpha level of .006.

Conflict Management. We tested conflict management as a predictor of cohesion, CWB, Article 15s, disciplinary actions (battalion commander ratings), morale, and withdrawal. Conflict management was a strong predictor of three of the six examined outcomes (cohesion, morale, and withdrawal). In the simple regression, the full scale predicted significant variance in cohesion with a standardized regression weight of .83 (adjusted $R^2 = .69$, $F(1, 55) = 123.38$, $p < .001$). The conflict management scale was also related to morale ($\beta = .71$, adjusted $R^2 = .49$, $F(1, 55) = 54.79$, $p < .001$) and withdrawal ($\beta = -.37$, adjusted $R^2 = .12$, $F(1, 55) = 8.60$, $p = .005$). The conflict management scale items did not significantly predict CWB (adjusted $R^2 = .06$, $F(1, 55) = 4.55$, $p = .04$), article 15s (adjusted $R^2 = -.01$, $F(1, 55) = 0.66$, $p = .42$), or disciplinary actions (adjusted $R^2 = -.02$, $F(1, 52) = .00$, $p = .98$) using the predetermined critical alpha level of .008.

Stress Management. We examined stress management as a predictor of career intentions, disciplinary actions (battalion commander ratings), stress amount, stress impact, well-being, and withdrawal. The stress management scale had a positive relationship with well-being with a standardized regression weight of .73 (adjusted $R^2 = .53$, $F(1, 55) = 60.99$, $p < .001$). As a predictor of career intentions, the stress management climate scale showed a significant positive relationship with a standardized regression weight of .48 (adjusted $R^2 = .22$, $F(1, 55) = 16.34$, $p < .001$). The stress management scale had significant, negative relationships with stress amount ($\beta = -.57$, adjusted $R^2 = .31$, $F(1, 55) = 26.48$, $p < .001$) and stress impact ($\beta = -.53$, adjusted $R^2 = .26$, $F(1, 55) = 21.08$, $p < .001$). The stress management single item did not account for any of the variance in withdrawal (adjusted $R^2 = .09$, $F(1, 55) = 6.20$, $p = .02$) or disciplinary actions (rated by battalion commanders; adjusted $R^2 = -.01$, $F(1, 52) = .31$, $p = .58$) based on the predetermined critical alpha level of .008.

Behavioral Health Orientation. We tested the behavioral health orientation dimension as a predictor of morale, stress amount, stress impact, well-being, and withdrawal. Behavioral health orientation did not reach the $ICC(2)$ or r_{wg} threshold for aggregation to the group level for the full scale or the single item; therefore, we conducted the regressions at the individual level. While other climate dimensions had low $ICC(2)s$, they had adequate r_{wgs} that allowed for group-

level analyses (see Table 13). At the individual level of analysis, the behavioral health orientation dimension significantly predicted all five hypothesized outcomes. (see Table 19).

The behavioral health orientation single item had a strong, positive relationship with morale ($\beta = .48$) and well-being ($\beta = .40$). The scales showed similar strong, positive relationships ($\beta = .58$ and $.46$, respectively). The single item accounted for 23% of the variance in morale and 16% of the variance in well-being. For both morale and well-being, the scale accounted for a significant amount of variance above and beyond the single item (R^2 change = $.11$, $F(1, 1285) = 204.47$, $p < .01$; R^2 change = $.06$, $F(1, 1283) = 90.38$, $p < .01$, respectively). Likewise, the behavioral health orientation single item had a negative relationship with stress amount and stress impact ($\beta = -.26$ and $-.30$, respectively). The scales showed a similarly strong, negative relationship ($\beta = -.32$ and $-.36$, respectively). The single item accounted for 7% of the variance in stress amount and 9% of the variance in stress impact. For the stress amount and stress impact outcomes, the scale accounted for a significant amount of variance above and beyond the single item (R^2 change = $.10$, $F(1, 1255) = 45.39$, $p < .01$; R^2 change = $.04$, $F(1, 1257) = 55.99$, $p < .01$, respectively). Finally, the behavioral health orientation single item and scale predicted withdrawal ($\beta = -.16$ and $-.18$, respectively). The single item accounted for 3% of the variance in withdrawal, and the scale accounted for a significant amount of variance above and beyond the single item (R^2 change = $.01$, $F(1, 1282) = 10.47$, $p < .01$).

Table 19

Behavioral Health Orientation Simple and Hierarchical Regression Results

	Morale	Stress amount	Stress impact	Well-being	Withdrawal
Behavioral health orientation SI β -weight	.48*	-.26*	-.30*	.40*	-.16*
Behavioral health orientation scale β -weight	.58*	-.32*	-.36*	.46*	-.18*
SI model adjusted R^2	.23*	.07*	.09*	.16*	.03*
SI + scale model R^2 change	.11*	.10*	.04*	.06*	.01*

Note. * $p < .01$, SI = Single item. All β -weights are standardized

Command Climate Diagnostic Items

Item level means and standard deviations for all diagnostic items are provided in Appendix D, as well as ICCs for the diagnostic items. For the diagnostic items, we did not rely on ICCs to determine the appropriateness of aggregation, because we did not expect consensus in responses from all members of the unit. However, we did examine ICCs to identify whether the diagnostics scores were influenced by group-level structure in the data. While the $ICC(1)s$ for 96% of the command climate diagnostic items were statistically significant, there were many that were small in magnitude. This suggests that although a company-level effect may exist, the effect size may be too small to be practically significant. Many of the items had an $ICC(1)$ that was below the .05 threshold identified by LeBreton and Senter (2008) as indicative of a group-level effect. None of the diagnostic items reached the $ICC(2)$ threshold of .70. The $ICC(2)s$

ranged from .08 to .63. However, given that the diagnostic items rely on individual observations of leader behavior, we did not expect high interrater agreement and consistency.

Appendix D, Table D-3 lists the diagnostic item company-level descriptive statistics. We aggregated items to the company level by taking the mean item score within each company. Mean item scores at the company level ranged from 3.04 to 4.34. Appendix D, Tables D-4 to D-11, provides intercorrelations among company-level diagnostic items and correlations of diagnostics items with scales and single-item scores. In general, diagnostic items correlated strongly with dimension scales and single items, but not as strongly as scales and single items correlated with each other (see Appendix D, Table D-12).

Criterion-Related Validation of Diagnostic Items

We conducted regressions to examine the omnibus relationship between a set of diagnostic items for each climate dimension and the outcome variable of interest. A significant R^2 value suggests that the set of diagnostic items as a whole contributed to prediction of the outcome measure. We did not examine the regression weights for individual diagnostic items because there was a high degree of multi-collinearity in the items, producing coefficient estimates that have large standard errors and wide confidence intervals.

Table 20 describes the adjusted R^2 value for each dependent variable associated with a dimension regressed on a set of diagnostic items. These analyses are corrected for family-wise alpha inflation using the same approach described previously for the full scales and single items. To minimize family-wise alpha inflation without overly inflating beta, the critical alpha level was set to be .05 divided by the number of dependent variables.

Table 20*Diagnostic Items-Dependent Variable Multiple Regressions*

Dimension	Dependent variable	Adjusted R^2	F ratio
Ethical leadership	Affective commitment	.27	3.05*
	Continuance commitment	-.09	.52
	CWB	.06	1.37
	Leader satisfaction	.67	12.31*
	Unit performance	.56	8.02*
	Unit performance (Officer)	.08	1.41
	Unit performance [†]	-.10	.54
	Unit readiness [†]	-.15	.31
Trust	Cohesion	.78	17.16*
	Collective efficacy	.78	17.20*
	Mutual trust	.74	14.04*
	OCB	.36	3.65*
	Unit performance	.65	9.75*
	Unit performance (Officer)	.17	.39
	Unit performance [†]	-.06	.74
	Unit readiness [†]	-.12	.13
	Unit training performance [†]	-.06	.74
Safety	Article 15s	-.00	.99
	Disciplinary actions [†]	-.09	.57
	Safety incidents [†]	-.10	.55
	Safety incidents (Soldier)	.13	1.82
	Stress amount	.25	2.85
	Stress impact	.22	2.62
Learning orientation	Collective efficacy	.61	12.18*
	Job satisfaction	.52	8.50*
	Unit performance	.54	9.18*
	Unit performance (Officer)	.19	2.37
	Unit performance [†]	.11	1.82
	Unit readiness	.05	1.34
	Unit training performance [†]	.12	1.89
	Engagement	.60	11.67

Table 20, cont.*Diagnostic Items-Dependent Variable Multiple Regressions*

Dimension	Dependent variable	Adjusted	
		R^2	F ratio
Conflict management	Cohesion	.61	8.95*
	CWB	.32	3.44*
	Article 15s	.26	1.45
	Disciplinary actions [†]	.02	1.09
	Morale	.53	6.80*
	Withdrawal	.45	5.20*
Adaptability	Collective efficacy	.76	11.25*
	Mutual trust	.76	11.33*
	Unit resilience	.76	11.47*
	Unit performance	.69	8.39*
	Unit performance (Officer)	.38	2.64
	Unit performance [†]	.30	2.33
	Unit readiness [†]	.13	1.48
	Unit training performance [†]	.21	1.83
Behavioral health orientation	Morale	.53	7.44*
	Stress amount	.25	2.84*
	Stress impact	.23	2.66
	Well-being	.54	7.56*
	Withdrawal	.14	1.95
Stress management	Career intentions	.27	2.70*
	Disciplinary actions [†]	-.02	0.91
	Stress amount	.18	2.05
	Stress impact	.19	2.12
	Well-being	.49	5.40*
	Withdrawal	.12	1.62

Note. * p -value was lower than the predetermined critical value for the relevant climate dimension, [†]variable was rated by the battalion commander.

Regression results for the diagnostic items were largely consistent with those for the full scales and single items. Generally, if an outcome was predicted by a command climate scale or single item, it was also predicted by the set of diagnostic items. Several exceptions existed where the scale and single item showed significant relationships, but the relationship was not significant when the set of diagnostic items were used as the predictor. This occurred for trust predicting unit performance (officer), safety predicting safety incidents (Soldier) and stress impact, and adaptability predicting unit performance (officer). Since we did not examine the behavioral health orientation scale and single item results at the group level but did aggregate the diagnostic items, the results for these analyses are difficult to compare. Table 21 shows a summary comparison of the scale, single item, and diagnostic item results.

Table 21*Summary of Regression Results for Scale, Single Item, and Diagnostic Item Survey Formats*

Dimension	Dependent Variable	Full Scale	Single Item	Diagnostics
Ethical leadership	Affective commitment	☑	N/A	☑
	Continuance commitment	n.s.	N/A	n.s.
	CWB	n.s.	N/A	n.s.
	Disciplinary actions [†]	n.s.	N/A	n.s.
	Leader satisfaction	☑	N/A	☑
	Unit performance	☑	N/A	☑
	Unit performance (Officer)	☑	N/A	n.s.
	Unit performance [†]	n.s.	N/A	n.s.
	Unit readiness [†]	n.s.	N/A	n.s.
Trust	Cohesion	☑	☑	☑
	Collective efficacy	☑	☑	☑
	Mutual trust	☑	☑	☑
	OCB	☑	☑	☑
	Unit performance	☑	☑	☑
	Unit performance (Officer)	☑	☑	n.s.
	Unit performance [†]	n.s.	n.s.	n.s.
	Unit readiness [†]	n.s.	n.s.	n.s.
Safety	Article 15s	n.s.	n.s.	n.s.
	Disciplinary actions [†]	n.s.	n.s.	n.s.
	Safety incidents [†]	n.s.	n.s.	n.s.
	Safety incidents (Soldier)	☑	☑	n.s.
	Stress amount	☑	n.s.	n.s.
	Stress impact	☑	☑	n.s.
Learning Orientation	Collective efficacy	☑	N/A	☑
	Job satisfaction	☑	N/A	☑
	Unit performance	☑	N/A	☑
	Unit performance (Officer)	☑	N/A	☑
	Performance [†]	n.s.	N/A	☑
	Unit readiness [†]	n.s.	N/A	n.s.
	Unit training performance [†]	n.s.	N/A	☑
	Engagement	☑	N/A	☑
Conflict Management	Cohesion	☑	☑	☑
	CWB	n.s.	N/A	☑
	Article 15s	n.s.	N/A	n.s.
	Disciplinary actions [†]	n.s.	N/A	n.s.
	Morale	☑	N/A	☑
	Withdrawal	☑	N/A	☑

Note. ☑ = A significant relationship was found, n.s. = Relationship not significant, N/A = Analyses were not conducted, * = Conducted at individual level of analysis, [†] = Variable was rated by the battalion commander.

Table 21, cont.*Summary of Regression Results for Scale, Single Item, and Diagnostic Item Survey Formats*

Dimension	Dependent Variable	Single		
		Full Scale	Item	Diagnostics
Adaptability	Collective efficacy	✓	✓	✓
	Mutual trust	✓	✓	✓
	Unit resilience	✓	✓	✓
	Unit performance	✓	✓	✓
	Unit performance (Officer)	✓	✓	n.s.
	Unit performance [†]	n.s.	n.s.	n.s.
	Unit readiness [†]	n.s.	n.s.	n.s.
	Unit training performance [†]	n.s.	n.s.	n.s.
Behavioral health orientation*	Morale	✓	✓	✓
	Stress amount	✓	✓	✓
	Stress impact	✓	✓	n.s.
	Well-being	✓	✓	✓
	Withdrawal	✓	✓	n.s.
Stress management	Career intentions	✓	N/A	✓
	Disciplinary actions [†]	n.s.	N/A	n.s.
	Stress amount	✓	N/A	n.s.
	Stress impact	✓	N/A	n.s.
	Well-being	✓	N/A	✓
	Withdrawal	n.s.	N/A	n.s.

Note. ✓ = A significant relationship was found, n.s. = Relationship not significant, N/A = Analyses were not conducted, * = Conducted at individual level of analysis, [†] = Variable was rated by the battalion commander.

Practical Application Testing

In order to examine the practical effectiveness of the single-item measures, we conducted a supplemental analysis to compare agreement between the scale and the single item when using a threshold to identify instances of poor command climate. This analysis allows a comparison of the practical effects of using scores from a single item versus scores from a multi-item scale when assessing whether a company may need to improve command climate. Strong agreement between the practical results using two approaches would indicate that a single-item survey produces similar findings to a longer, multi-item scale survey. That is, a unit would *not* be missing potential problems if they used a shorter, single-item survey. We set an arbitrary threshold of 3.0 for the command climate scores, such that 3.0 and above was considered a good climate and below 3.0 was considered to be a climate with a potential problem.² We dichotomized each scale and single-item mean for each company to be: (a) 3.0 and above or (b) below 3.0. Making the assumption that the scale score equated to the true score, we then coded the data to represent whether the single item was accurate (i.e., both scale and single item

² We used an arbitrary threshold of 3.0 because theory and data were not available to inform this decision. Benchmarks are not yet available to inform thresholds for the climate dimensions, and the sample for the current study was not large enough to be confident that the mean levels of climate found would be generalizable.

showed a problem or neither showed a problem) or not accurate (i.e., the scale showed a problem, but the single item did not or the scale did not show a problem, but the single item did). In total, the single-item command climate survey matched the multi-item scale results for 98% of the cases (446 out of 456). Matches within the dimensions ranged from 91% for stress management to 100% for safety, learning orientation, and adaptability. Eighty-eight percent of companies had single items that agreed perfectly with the full scale. The remaining 12% of companies had between zero and two errors in the single-item dimensions. Table 22 shows the agreement across the eight dimensions and 57 companies.

Table 22

Agreement of Scale and Single Item in Detecting Climate Issues

Unit ID	Ethical leadership	Trust	Safety	Learning orientation	Conflict management	Adaptability	Behavioral health orientation	Stress management	Total correct by company
100	1	1	1	1	1	1	1	1	8
101	1	1	1	1	1	1	1	1	8
102	1	1	1	1	1	1	1	0	7
103	1	1	1	1	1	1	1	1	8
104	1	1	1	1	1	1	1	1	8
105	1	1	1	1	1	1	1	1	8
106	1	1	1	1	1	1	1	1	8
107	1	1	1	1	1	1	1	1	8
108	1	1	1	1	1	1	1	1	8
109	1	0	1	1	1	1	1	0	6
110	1	1	1	1	1	1	1	1	8
111	1	1	1	1	1	1	1	1	8
112	1	1	1	1	1	1	1	1	8
113	1	1	1	1	1	1	1	1	8
114	1	0	1	1	1	1	1	1	7
115	1	1	1	1	1	1	1	1	8
117	1	1	1	1	1	1	1	1	8
118	1	1	1	1	1	1	1	1	8
120	1	1	1	1	1	1	1	1	8
121	1	1	1	1	1	1	1	1	8
122	1	1	1	1	1	1	1	1	8
123	1	1	1	1	1	1	1	1	8
124	1	1	1	1	1	1	1	1	8
125	1	1	1	1	1	1	1	1	8
126	1	1	1	1	1	1	1	1	8
128	1	1	1	1	1	1	1	1	8
131	1	1	1	1	1	1	1	1	8
132	1	1	1	1	1	1	1	1	8

Table 22, cont.

Agreement of Scale and Single Item in Detecting Climate Issues

Unit ID	Ethical leadership	Trust	Safety	Learning orientation	Conflict management	Adaptability	Behavioral health orientation	Stress management	Total correct by company
134	1	1	1	1	1	1	1	1	8
135	1	1	1	1	1	1	1	1	8
136	1	1	1	1	1	1	1	1	8
137	1	1	1	1	1	1	1	1	8
138	1	1	1	1	1	1	1	1	8
139	1	1	1	1	1	1	1	1	8
140	1	1	1	1	1	1	1	1	8
141	1	1	1	1	1	1	1	1	8
142	1	1	1	1	1	1	1	1	8
143	1	1	1	1	1	1	1	1	8
144	1	1	1	1	1	1	1	1	8
145	1	1	1	1	1	1	1	1	8
145	1	1	1	1	1	1	1	1	8
147	1	1	1	1	1	1	1	1	8
148	1	1	1	1	1	1	1	1	8
149	1	1	1	1	0	1	1	0	6
150	1	1	1	1	1	1	1	0	7
151	1	1	1	1	1	1	1	1	8
152	1	1	1	1	1	1	1	1	8
153	1	1	1	1	1	1	1	1	8
154	1	1	1	1	1	1	1	1	8
155	1	1	1	1	1	1	1	1	8
156	1	1	1	1	1	1	1	1	8
158	0	1	1	1	1	1	0	1	6
162	1	1	1	1	1	1	1	1	8
164	1	1	1	1	1	1	1	1	8
166	1	1	1	1	1	1	1	1	8
167	1	1	1	1	1	1	1	1	8
168	1	1	1	1	1	1	1	0	7
Total correct	56	55	57	57	56	57	56	52	448
%	98	96	100	100	98	100	98	91	98

Note. 1 = Single item agrees with scale, 0 = Single item does not agree with scale.

Discussion

Command climate remains a high priority for the U.S. Army. Valid and reliable measures of command climate provide unit leaders with actionable insight into unit members' shared perceptions of their units. Command climate survey results provide a useful tool to help leaders quickly identify and resolve potential problems and develop positive unit climates. Initial research into developing a prototype climate assessment utilizing single-item measures to assess command climate supported the feasibility of the approach to capture potential climate issues within units (Adis et al., 2020). Results showed that a short 13-item tool can be used as a quick "health check" to assess the command climate of a unit. ARI's efforts to examine this new method for assessing command climate also provided an opportunity to advance the theoretical understanding of command climate and to provide insight into a new methodology for assessing command climate.

The current effort sought to expand the initial set of 13 command climate dimensions developed in previous ARI research to more fully capture the command climate domain and to further demonstrate the viability of single-item measures. A set of eight single items was compared to a 49-item multi-item scale. Results generally supported the feasibility of using a short, single-item tool to assess company-level command climate. Convergent validities of the single items with the multi-item scales were at or above .72 for all eight scales, and predictive validities with proposed outcomes were on par with predictive validities associated with many of the multi-item scales. We used hierarchical regressions to determine whether the multi-item scales explained significant additional variance in the criteria over and above that explained by the single items. Of the 13 company-level dimension-criteria relationships that were significant, over half (54%) of the hierarchical regressions indicated that the multi-item scale added significant variance to the single item in predicting the criteria. These increases were small and most ranged from five to eight percent. All of the multi-item scales demonstrated high reliabilities, and all of the multi-item scales demonstrated acceptable within group agreement, suggesting the constructs were measuring a group-level effect.

Reliability of the Full Scales and Single Items

Results showed strong support for the reliability of the multi-item assessment and moderate support for the reliability of the single-item assessment. Examination of item-total correlations identified items in five multi-item scales that needed to be removed to improve reliabilities (ethical leadership, safety, conflict management, adaptability, and behavioral health orientation). In most cases, the items that were removed from a scale were reverse-worded items that did not fit with the other items, even after being recoded. After we removed these items, the Cronbach's alphas for the climate scales ranged from .83 for conflict management to .94 for trust.

While the multi-item scales demonstrated moderate to strong reliabilities, some scale reliabilities could still be improved to reduce measurement error if these scales were going to be used in high-stakes decisions. In particular, reliabilities for adaptability ($\alpha = .87$), behavioral health orientation ($\alpha = .88$), learning orientation ($\alpha = .86$), stress management ($\alpha = .85$), and conflict management ($\alpha = .83$) could still be further improved. Because the application of the

multi-item scale assessments is for developmental and informational purposes rather than for high-stakes decisions, the current reliabilities are sufficient.

Estimated reliabilities for the single-item assessments were more moderate, ranging from .57 (ethical leadership) to .82 (stress management). Calculation of reliability for single-item measures is somewhat tenuous. We adopted the approach of Wanous et al. (1997) to estimate the single-item reliabilities, which uses the correction for attenuation formula and algebraically solves for single-item reliability. This approach assumes that the single item is perfectly parallel with the domain of the scale (an assumed true correlation of 1.0) and uses the correlation between the single item and the scale and the reliability of the scale as inputs. This means that the reliability estimate of the single-item measure will be lower if there is a low correlation between the single item and the scale and/or there is a low scale reliability.

The ethical leadership and adaptability dimensions had the lowest single-item reliability estimates (.57 and .59, respectively). These two scales also had the lowest correlations between the scales and single items (.73 and .72, respectively). The ethical leadership single item focuses on the ethical behavior of unit members, while the scale items are more focused on the ethical behavior of the leaders themselves. This divergence in content may be constraining the relationship between the scale and single item and thus, the single-item reliability. Ensuring that the single item uses the same focus as the scale items will likely improve the single-item reliability estimate. For adaptability, there is no obvious discrepancy in the item content, but the correlation between the single item and scale was moderate, limiting the single-item reliability estimate. Single item reliability estimates could be improved by revising single items so that they correlate more highly to the scales.

The highest single-item reliability estimate was for stress management (.82). This dimension also showed the strongest correlation between the scale and single item. Overall, the single-item reliabilities ranged from .57 to .82 for the eight dimensions, and would benefit from small modifications to the scale or single item to achieve higher scale reliabilities and higher correlations between the scale and single items.

Construct Validity of Command Climate Scales

In order to establish the validity of the command climate dimension assessments, we examined both the intercorrelations among scales and the scales' factor structures to determine whether the dimensions could be distinguished from each other. In the individual-level data, correlations among the scales ranged in strength from .42 to .78, with an average of .60. On the surface, this suggests that many scales are closely related. For example, stress management was highly correlated with behavioral health orientation (.78), suggesting some overlap between these two constructs at the individual level. At the company level, the average intercorrelation between the eight constructs was .78, suggesting even less distinction.

The individual-level factor analysis results suggested a total of seven underlying factors in the data. In sum, the results of the EFA demonstrate distinct factors for safety, learning orientation, trust, ethical leadership, adaptability, and conflict management, with no cross-loading of items from other scales. The other factor consisted of items that cross-loaded mostly

from behavioral health orientation and stress management, suggesting some level of overlap that should be investigated further.

Support for Group-Level Effects

Command climate is considered a shared, group-level perception and a unit-level construct. These shared perceptions among individuals within a specified level of the organization theoretically justify the aggregation of individual perceptions of climate to the group or organizational level (Isaksen & Akkermans, 2011). Best practices in group-level research indicate that each construct should be tested to determine if there is sufficient group-level variance to warrant conducting analyses at the group level. Three indices were used to examine whether the multi-item scales and single-item assessments represented group-level constructs: $ICC(1)$, $ICC(2)$, and $r_{wg}/r_{wg(j)}$. Support for aggregating the measures to the group level was mixed.

For $ICC(1)$, results showed that all multi-item scales reached statistical significance at the .05 effect size threshold, suggesting a small group effect (LeBreton & Senter, 2008). Two dimensions, trust and adaptability, had an $ICC(1)$ of .10, suggesting a medium-size group-level effect. For the single-item measures, each dimension had a statistically significant $ICC(1)$, but the ethical leadership, learning orientation, and behavioral health orientation dimensions did not reach .05 effect size. These effect sizes are not particularly large; one interpretation of the effect sizes is that an effect of .10 indicates that approximately 10% of the variance in ratings is due to systematic differences between companies. On the other hand, the significant level of the group effects suggests that ignoring the company level influences on these variables would violate the regression assumption of independent residuals; therefore, an examination of group-level effects is important.

For the $ICC(2)$ statistic, an index of agreement within each company, none of the multi-item scales reached the predefined benchmark of .80. Many reached the level of .65, which can be considered reasonable for initial research. $ICC(2)$ can be interpreted as the reliability of the means of raters within each group. Using a measure with an $ICC(2)$ of .65, therefore, suggests that 65% of the score is unit-level variability, and the remaining 35% is individual-level variability. One way to increase $ICC(2)$ scores is by including more raters or unit members from each company in the company-level means. This would ensure that the company is adequately sampled and would be likely to produce more stable estimates. The present research set a minimum cutoff of ten unit members per company, which may not have been enough to produce a mean that accurately represented the company. Of the 57 companies included in the final sample, the average number of unit members in each company was 24, and there were nine companies with less than 15 unit members. In future research, having a cutoff that exceeds 25–30 unit members may provide $ICC(2)$ values that reflect higher reliabilities of unit means. On the other hand, if consensus within the company is low because unit members are having differing experiences or perceive their experiences differently, having more raters will not necessarily produce a higher $ICC(2)$.

As LeBreton and Senter (2008) point out, a low $ICC(2)$ can be due to low interrater reliability, low interrater agreement, or both. The source of the low ICC is important and cannot

be determined from $ICC(2)$ alone. It is possible to have low interrater reliability reflected in the $ICC(2)$ but adequate interrater agreement. In particular, this occurs when the group level scores are restricted in range and groups are not very different from each other (LeBreton et al., 2003). We further investigated within group agreement with $r_{wg}/r_{wg(j)}$. Based on the revised $ICC(2)$ threshold of .65 and .70 average $r_{wg}/r_{wg(j)}$ threshold, we aggregated seven of eight multi-item scales and three of eight single-item measures to the company level (see Table 13 for a review). Generally speaking, $r_{wg}/r_{wg(j)}$ varied greatly from company to company. For those companies with low $ICC(2)$, single item r_{wgs} ranged from .32 to .57. This might suggest differences within companies in how items were interpreted. For example, a positive climate for managing stress within the unit may be perceived differently by people who have different stress coping styles.

Another reason for low agreement could be due to group-level effects at echelons below the company. Army companies typically have 100–250 Soldiers and are composed of a headquarters element and two or more platoons, which each have two or more squads. It may be that there are group effects at the platoon or squad levels. In some cases in the current study, company data may represent predominantly one platoon and in other cases company data may represent multiple platoons. To the extent that this is inconsistent across companies, this could produce a range in the level of agreement across companies. Platoon and squad data were not available, and we were unable to investigate these effects in the current effort. Future research should investigate agreement and climate effects at multiple organizational levels to empirically determine the impact of nested group data at multiple levels.

Another factor to consider is that perceptions of some of these constructs may not be shared but rather are based on individual perceptions or experiences (e.g., in-group/out-group, leader member exchange relationships). As an example, a positive climate for behavioral health orientation may not be salient to all members of the unit. Those who have no need to seek treatment or services may believe the unit is supportive, but those who have sought out treatment may have had different experiences. To the extent that some Soldiers in a unit had varied experiences, company-level results would demonstrate no or a low group-level effect. In these cases, using the mean to form aggregate data is not useful; rather, it may make sense to examine climate strength rather than climate level and use an index such as the standard deviation within each company instead of the mean to identify potential problems.

Finally, for conducting the predictive validity analyses, we examined group-level effects in the outcome measures. Support for aggregating the outcome measures to the group level was mixed, with some ICCs not reaching the threshold for aggregation. Specifically, $ICC(1)$ s were quite low for continuance commitment, career intentions, well-being, withdrawal, and stress impact (.01-.02). It is therefore questionable whether group-level effects exist for these measures and whether aggregation to a group mean is meaningful. For these outcome measures group membership may be less important. When ICCs are sufficiently high, group-level effects should be examined; however, low $ICC(1)$ scores do not preclude conducting group-level analyses. Future research could explore main and cross-level interactions among climate dimensions and outcomes. Ultimately, the decision to aggregate depends on multiple factors, including the research questions and the type of composition models that apply to the constructs (e.g., see Chan, 1998). Some outcomes (cohesion, unit performance, collective efficacy, mutual trust, and safety incidents) showed moderate company-level effects ($ICC(1)$ s were close to or above .10).

In these cases, examining group-level effects is critical because the results indicate a nested structure in the data.

Criterion-Related Validity of the Multi-Item and Single-Item Assessments

Criterion-related validity evidence was generally strong for the scales and single-item measures. Of the seven multi-item scales that we aggregated to the company level, all were significantly related to at least one of the hypothesized outcome measures. All three of the single-item measures (trust, safety, and adaptability) that we aggregated to the company level were related to at least one outcome. In addition, for those three dimensions, the multi-item and single-item measures showed similar profiles of criterion-related validity relationships. In evaluating the effectiveness of the single-item measures, there was only one of out the 14 relationships (safety-stress amount) in which using the full scale would have revealed effects missed by the single item. The safety scale includes specific items about adherence to safety regulations and protocols and whether safety violations are quickly corrected. It's possible that this specific information is important for predicting the amount of stress Soldiers experience. This highlights the importance of considering whether a single item is adequate for assessing the important aspects of a climate dimension.

We used hierarchical regressions to determine whether the multi-item scales explained significantly more variance in the associated criteria than the single items alone. Of the 13 company-level dimension-criteria relationships that were significant, over half (54%) of the hierarchical regressions found that the multi-item scale added significant variance to the single item in predicting the criteria. The increases ranged from four to 28% (for the increase found in the regression of stress amount on safety), although most were in the five to eight percent range.

Criterion data for many of the outcome measures were provided by Soldiers and officers, and for some criteria, battalion leaders. Ratings of unit performance provided by Soldiers and officers were significantly related to the adaptability climate dimension. Sample sizes for the battalion leader regressions were smaller due to missing commander ratings for some companies; thus, the power may have been too low to identify results. Alternatively, the lack of a relationship for the battalion leader analyses could be due to differences in standards, perspectives, or opportunities to observe performance between the Soldiers and the battalion leaders providing ratings. As Soldiers provided both climate dimension and unit performance data, the strength of these relationships may be overestimated/inflated due to common method bias. Thus, we recommend caution in interpreting these results. In the next section, validity results for each of the climate dimensions will be summarized.

Safety

The single item safety climate measure had a moderate relationship with safety incidents and stress impact, explaining 22 and 26% of the variance, respectively. Adding the multi-item scale added significantly to the prediction of stress amount (additional 28% of the variance), but did not add significant variance to the other two outcomes. Thus, units that emphasize and ensure a safe environment are more likely to have fewer safety incidents and have lower levels of stress. Note that there was no significant relationship between safety climate and the battalion leaders'

assessments of the number of safety incidents. The base rate for safety incidents may be low, making it difficult to detect relationships between the two measures. It is also possible that battalion leaders are less aware of minor safety infractions that Soldiers know about but that do not reach the more serious level of safety incident.

Adaptability

An adaptable climate, as measured by both the single item and scale, was significantly related to five of the unit outcomes. Similar to findings for other dimensions, the battalion leaders' ratings of unit performance, readiness, and performance in training were not significantly related to unit members perceptions of unit adaptability. The single-item assessment accounted for 70% of the variance in collective efficacy, 77% of mutual trust, 63% of unit resilience, 62% of unit performance as rated by Soldiers, and 23% of unit performance as rated by officers. The multi-item scale accounted for a small portion of additional variance in each outcome (ranging from 4 to 9%). The very strong relationship between adaptability and collective efficacy, mutual trust, and unit performance may reflect unit-level perceptions about the importance of leader and unit member flexibility and ability to adjust to new environments.

Ethical Leadership, Trust, Learning Orientation, Conflict Management, and Stress Management

The ethical leadership, trust, learning orientation, conflict management, and stress management dimensions of command climate showed sufficient agreement for the full scale, but not for the single-item measures. Thus, for these dimensions, criterion related validity evidence was examined for the scales only.

Ethical Leadership. Ethical leadership climate was significantly related to four of the nine hypothesized outcomes. The ethical leadership scale accounted for 33% of the variance in affective commitment, 52% of the variance in leader satisfaction, 51% of the variance in unit performance as rated by Soldiers, and 16% of the variance in unit performance as rated by officers. The ethical leadership climate scale was not related to continuance commitment, CWB, disciplinary actions, or performance or readiness as rated by battalion leaders. As mentioned previously, the small sample of battalion leader raters likely limited the power to detect significant relationships between the climate construct and battalion leader-provided performance and readiness outcome ratings. Similarly, the small sample of battalion leader reports of disciplinary actions, along with the likely low base rates of these actions may have limited the power for this comparison. Overall, the results suggest that a climate of ethical leadership is more likely to foster satisfaction with leaders, feelings of attachment, and connection with the unit and the Army.

Trust. Trust climate was significantly related to six of the eight hypothesized outcomes. The trust scale accounted for 77% of the variance in cohesion, 78% of the variance in collective efficacy, 75% of the variance in mutual trust, 20% of the variance in OCB, 69% of the variance in Soldier-related unit performance, and 24% of the variance in officer-rated unit performance. The trust scale did not predict battalion commander-rated unit performance or unit readiness. Overall, a climate for trust within companies was a strong predictor of not only unit performance

but also of outcomes that have been historically important to the Army (i.e., cohesion, collective efficacy, unit performance). Units with members who feel that they can count on their peers and leaders are more likely to have members who feel a sense of cohesion and confidence in their ability to coordinate and execute their tasks, trust and help one another, and perform better as a unit. These results are consistent with previous ARI research findings regarding the positive relationship between cohesion, collective efficacy, mutual trust, and performance (Estrada et al., 2021). Trust is conceptually a necessary precursor to building cohesion, collective efficacy, and effective performance. The strong relationship between the trust climate measures and the mutual trust outcome measure may be due to the overlap in the trust construct.

Learning Orientation. Learning orientation was related to five of the eight hypothesized outcomes. The learning orientation scale was strongly related to collective efficacy (64% of variance), job satisfaction (53% of variance), unit performance rated by unit members (54% of variance) and officers (16% of variance), and engagement (41% of variance). As with the other climate dimensions, there were no significant relationships between learning orientation climate and the battalion leader outcomes. Thus, units with a strong climate for learning and development are more likely to feel they work together effectively as a unit and are satisfied and engaged with their work.

Conflict Management. The conflict management scale accounted for significant amounts of variance in three of the six outcomes: cohesion (69%), morale (49%), and withdrawal (12%). However, the scale was not related to CWB, article 15s, or disciplinary actions. Thus, a climate in which Soldiers feel that they are supported in their efforts to resolve disagreements and are able to take care of issues themselves without leadership intervention is related to a feeling of bonding and connectedness with the unit (i.e., cohesion), morale, and withdrawal from work. The lack of relationship between conflict management and CWB is somewhat surprising, as one would expect that disagreements at work would lead to negative outcomes, particularly given that there is some overlap in content with the CWB “started an argument with someone at work” item.

Stress Management. The stress management scale was related to four of the six hypothesized outcomes. A unit climate for positive stress management explained a significant amount of variance in well-being, career intentions, stress amount, and stress impact (53%, 18%, 31%, and 26%, respectively). However, this same climate scale score did not account for a significant amount of the variance in withdrawal or battalion commander-rated disciplinary actions. Thus, units with a positive approach for managing stress have Soldiers who report a greater sense of well-being, are more likely to consider remaining in the Army, experience less stress, and are less impacted by that stress.

Behavioral Health Orientation

Behavioral health orientation did not reach the $ICC(2)$ or r_{wg} threshold for aggregation to the group level; thus, we conducted the regressions at the individual level. Because the items lack unit agreement and were analyzed at the individual level rather than unit level, conclusions about behavioral health orientation as a unit climate construct are not warranted. However, examining individual level relationships for exploratory purposes may help inform our

understanding of the relationship between these individual-level constructs. Both the single item and scale demonstrated that individuals who feel supported in seeking out behavioral health assistance have higher morale and feelings of well-being, lower stress, and are less likely to report withdrawing from work activities. Because the agreement statistics did not reach the thresholds for aggregation, we caution readers to avoid drawing inferences about group-level effects of behavioral health orientation.

Diagnostic Items

Correlations between the diagnostic items for a given dimension and the full scale and single item were generally high, although there was a great deal of variance in correlations across the dimensions and items (ranging from .11 to .94). In addition, these correlations were not as high as the full scale item intercorrelations or the correlations between the full scales and single items. This was expected because the diagnostic items were not intended to be parallel with the scales and single items.

In terms of criterion-related validity, the diagnostics results were very similar to those for the full scales and single items (examined at the company level). Many of the patterns of relationships found between diagnostic items and criteria aligned with those that were found for the single items or full scale, with the climate measures correlating with some outcomes but not others (see Table 22 for a summary of the regression results). This suggests that the diagnostic items are generally aligned with the command climate dimensions and measure relevant aspects of the climate dimensions.

There were only a few exceptions to this alignment. For example, for the safety dimension, the full scale and single item were related to safety incidents and stress (amount and impact), but the diagnostic items were not related to these outcomes. In another example, the behavioral health orientation dimension showed a similar pattern with stress impact and withdrawal; the scale and single item were related to these outcomes, but the diagnostic items were not. Additional research is needed to determine if these differences are driven by specific items in the diagnostic sets. In practical applications, it may be that one or many diagnostic items reveal a problem with the climate, and a one-to-one alignment with the single item and scale results would not be expected. Subsequent research is needed to identify the weight of each factor in the diagnostic sets in determining the relevant outcomes.

Assessment of the Practical Application of Single-Item Measures

The validity of the practical application of the single-item assessments was examined by comparing the performance of the single items to the multi-item scales for identifying dimensions that were above or below a given mean threshold, which would signal to a commander that there was a possible climate problem. This is likely how a single-item assessment would be used in a practical setting. Overall, the single-item assessments matched the classification of the multi-item scale in 98% of the cases. In other words, for each company in our sample, the number of climate dimensions that were flagged as “low” or potentially problematic using the multi-item scales were almost identical to the number of climate dimensions flagged using the single-item approach. The match rate for specific climate

dimensions was very consistent across dimensions and ranged from 91% to 100% matches. These results indicate that use of a short, 8-item measure would produce almost exactly the same results regarding which dimensions might indicate a climate issue, as would a much longer, multi-item survey. The virtually identical results achieved using a set of multi-item scales and a set of single items demonstrates the potential usefulness of the single-item approach. Use of the short survey would allow commanders to quickly assess command climate within their units and follow-up where needed to address areas of concern.

Summary

Most of the anticipated relationships were observed as expected, showing evidence for the criterion-related validity of the full scale and for some of the single items. Moreover, where comparisons could be made, the single items generally performed as well as the full scales in predicting relationships with criteria. Many of the relationships in the criterion-related validity evaluation were very strong. This may be partially due to common method bias, as discussed further in the following section.

The command climate constructs generally showed the expected patterns of criterion relationships, suggesting the measures have a degree of criterion-related validity. We found some evidence that for a small number of dimension-criteria relationships, multi-item scales and single items together were preferable to single-item measures alone from a prediction standpoint. In most cases, however, and in the practical application comparisons, the single items performed very accurately. Overall, regression results and the practical application analysis support the effectiveness of single-item measures.

Limitations and Future Research

While the current research showed some promising results, there are some limitations to the findings. One limitation is that the data were collected at a single time point, and Soldiers provided ratings for climate and most of the outcome variables. Common method bias is a concern because it has been found to inflate relationships by as much as 25 to 40% (Podsakoff et al., 2003). Statistical corrections for common method bias are in early stages of development and research has not yet demonstrated how effective these corrections are (Conway & Lance, 2010). Subsequent research should explore ways of collecting data on outcomes through means different from self-report; for example, constructs could be measured based on surveying additional leaders. Another method would be to collect different types of data from different members of the unit (i.e., half the unit answers climate items and the other half answers outcome items).

A further limitation was the sample size. While we had a fairly large sample of companies ($N=57$) in the final sample, there were an average of 24 unit members in each company, and nine companies had less than 15 unit members. In the present research, we set a minimum cutoff of 10 unit members per company, which may not have been enough responses to produce a mean that accurately represented the underlying company-level perceptions. In future research, a cutoff that exceeds 25–30 may lead to more reliable estimates of the climate dimension company-level means.

Another challenge associated with the single-item approach is related to the single-item reliability estimates. The reliability estimates for the single items ranged from .57 to .82. The Wanous et al. (1997) approach for estimating single-item reliability is dependent on the correlation between the single item and multi-item scale and the multi-item scale reliability. In future research, we recommend small modifications to the scale items and single items to improve both scale reliabilities and the correlations between the single items and scales. Improvements to either or both of these values will improve the estimate of the single-item reliability. Another approach would be to investigate item-level ICCs. Individual items may vary with respect to their level of group variance, and an examination of the item-level ICCs may allow for the refinement of items in the multi-item scales, and subsequently improve the reliability of the scales (Bliese et al., 2019).

Criterion-related validity results were weak in both Adis et al. (2020) and in the current research for outcomes assessed with battalion leader ratings. In both samples, the number of battalion leader ratings was low, reducing power to detect criterion relationships. In future research, collecting additional ratings for each company could improve the reliability of the battalion ratings. Battalion leader rater effects could also be examined to identify and attempt to eliminate rater effects (i.e., rater leniency or rater severity error).

Adis and colleagues (2020) mentioned several other ideas for continuing research in this area, including investigating the impact of climate at multiple organizational levels. Both the Adis et al. (2020) and current research examined group-level effects of company membership. However, Army companies are made up of smaller, nested units (platoons, squads) and are nested within larger units (battalions, brigades). Adis et al. (2020) recommended consideration of smaller nested levels in future research to allow for a more precise estimate of the effects of platoon and company membership on group-level perceptions.

In both the Adis et al. (2020) and this research, the researchers aggregated individual-level responses to create mean scores for the single items and multi-item scales, representing a referent-shift consensus composition model approach where mean individual responses were aggregated to the next level (company). We found lower $ICC(2)$ and $r_{wg}/r_{wg(j)}$ scores for several dimensions (e.g., hazing in the Adis et al. (2020) research, behavioral health orientation in the current research). For some dimensions, it may be more appropriate to use dispersion composition models where climate dimension strength, the variance of unit members' responses, best represents the underlying construct of interest (see Chan, 1998).

An additional statistical approach to consider for future research would be to investigate the distribution of $r_{wg}/r_{wg(j)}$ across units and screen out units with low agreement before examining climate dimension-outcome relationships. One could argue that there may be unit differences in the range of $r_{wg}/r_{wg(j)}$ s. In other words, if there is low agreement within a unit on a particular dimension, the unit should be screened out of criterion analyses because there is not a unit-level shared perception about that particular climate dimension. Another method for exploring this same issue may be to use climate strength as a weighting factor, examining the climate dimensions-criterion relationships using climate strength as an interaction term or a main effect (G. Goodwin, personal communication, December 14, 2017). Finally, skewness at the unit

level may be important to consider. In effect, that it may be important to not only examine variation in unit climate dimensions means (climate strength), but also the skewness of those means. It may be that most people within a unit agree about the mean level of a particular climate dimension, but that a subset have a very different perception. That skewness could be obscuring the unit climate results (means, standard deviations), as well as the relationships between climate dimensions and outcomes (G. Goodwin, personal communication, December 14, 2017). Results from these analyses may help inform not only how to present the data back to battalion leaders, but also would inform how leaders could best respond to those results. For example, the intervention to address a unit with high agreement (strong climate) about a low level of trust climate would be very different than the intervention needed to address a unit with low agreement (weak climate) or skewed trust climate.

In terms of the practical application of a single-item approach, additional research is needed to determine the type of data that would be most useful to commanders and how to best present that data. Research is needed to identify the appropriate cut-off threshold that would be indicative of an issue in the unit. Results of different strategies for setting a cut-off or flag (e.g., flag results if mean score is less than 3.0 or skewed or bimodal distributions) could be compared. These strategies could be informed by both empirical results and an understanding of Army priorities and risks. For example, if Army senior leadership is particularly concerned with having highly adaptable units and the risk for units with lower adaptability is high, a lower cut-off threshold could be set for the adaptability climate dimension. Further, these strategies might be influenced by the type of unit or unit mission. For example, having a climate for adaptability may be essential for combat arms units, suggesting a stringent cut-off strategy to flag situations where the unit may be at risk. For other types of units such as combat services support, the risk of a lower unit climate for adaptability may not be as great, and a more moderate cut-off strategy could be utilized. With additional unit-level data, researchers may be able to investigate different cut-off strategies and how those strategies impact relationships with the outcome measures.

Additionally, future research should explore how to best report climate survey results to commanders. Important factors to consider include the type of data to present, report format, and types of comparisons that would be most meaningful for leaders (e.g., compare company results to other units in brigade or other similar units across the post or across the Army). Company leaders will also need guidance for interpreting survey results, as well as suggestions for how to best use the diagnostic items in either a sensing session or follow-up survey to gather additional data from unit members. Additional work is needed to refine and validate the diagnostic items in both the Adis et al. (2020) and current research to ensure the diagnostic items appropriately capture the potential causes of problems within a dimension.

Conclusion

The results of the current research and the previous research (Adis et al., 2020) demonstrate a highly promising approach for reducing survey burden in the Army. In their earlier research, Adis et al. (2020) developed measures for 13 command climate dimensions, collected data to evaluate the measures' psychometric and criterion-related validity, and compared the results of the single items with the multi-item scales. They found preliminary support for the feasibility of using the 13-item assessment tool as a quick "health-check" on the

command climate of a unit. By dramatically reducing the number of items required to assess each dimension to a single item, there was an opportunity to investigate additional command climate constructs while still maintaining a shorter survey length. A number of important command climate areas were not included in the initial set of 13 dimensions, yet had the potential for meaningful impact on unit outcomes. Thus, in the current research we sought to identify additional climate dimensions that would provide unit leaders with a comprehensive assessment of their unit members' shared perceptions. When using a single-item approach, the addition of new climate dimensions has a very small impact on the survey length, but a potentially large impact on the usefulness of the tool to help leaders quickly identify problems and develop positive unit climates. The current research also offered the opportunity to collect additional evidence beyond that provided by Adis and his colleagues (2020) regarding the psychometric characteristics, criterion-related validity, and practical application of the single-item approach.

The current research provides support for the use of a single-item measurement approach for assessing command climate. Although single-item reliabilities could be improved and additional research should be conducted to investigate single-item group level effects, the single items performed comparably to the longer, multi-item scales. Single-item command climate measures offer an innovative approach to reducing survey burden while providing unit leaders with accurate feedback regarding the climate in their units. Combined with the diagnostic items, this approach can provide unit leaders with an efficient assessment method and actionable information to develop and maintain positive command climates within their units.

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Appendix A. Dimension Scales and Items

Soldiers were provided the following instructions for completing the Command Climate Scales:

INSTRUCTIONS: Please use the scales provided to answer all questions for the survey. Mark your responses on the scannable form. When the statements refer to your “unit,” please think about your Company/Troop/ Battery as your unit.

To what extent to do you agree with the following statements:

Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree	N/A – Don’t know
(A)	(B)	(C)	(D)	(E)	(F)

The multi-item scales can be seen in Table A-1.

Table A-1

Command Climate Scale Items

1. Ethical leadership	
Ethics2	Unit leaders behave ethically
Ethics3	Leaders of my unit value doing the right thing
Ethics4	Unit leaders hold all unit members to a high ethical standard
Ethics5	Unit leadership adheres to the Army Values of Honor and Integrity
Ethics6	Leaders in my unit tend to overlook unethical conduct
Ethics7	If unit members see unethical behavior, they report it to leadership
2. Trust	
Trust2	Members of this unit are trustworthy
Trust3	Unit members can count on our leaders
Trust4	Members of my unit have confidence in one another
Trust5	Unit leaders follow through on their commitments
Trust6	Members of my unit can count on each other
Trust7	Unit members can be trusted to follow through on their word

Table A-1, cont.*Command Climate Scale Items*

3. Safety	
Safety2	Members of my unit follow safety regulations
Safety3	Unit members ensure others are following safety rules
Safety4	Unit members alert leadership if there is a safety concern
Safety5	Members of my unit often sacrifice safety in order to get the job done faster
Safety6	Unit members only follow safety protocols when leaders are watching
Safety7	Safety violations are quickly corrected
Safety8	Unit leaders prioritize safety
Safety9	Unit leaders hold unit members accountable for following safety rules
4. Learning orientation	
LearnOr2	Unit members are encouraged to learn from one another's experiences
LearnOr3	Members of this unit frequently share their knowledge with each other
LearnOr4	Unit leaders encourage unit members to constantly improve their skills
LearnOr5	In our unit, mistakes are considered opportunities to learn
LearnOr6	Unit members are recognized for learning to solve problems
5. Conflict management	
ConfMgmt2	When there is conflict within my unit, it is resolved effectively
ConfMgmt3	When members of my unit are angry at each other, they effectively work it out
ConfMgmt4	We address disagreements before they can cause problems
ConfMgmt5	Unit leaders allow conflict between unit members to get out of control
ConfMgmt6	Unit members often have to rely on leadership to resolve disagreements
ConfMgmt7	Disputes between unit members often turn ugly or get personal
ConfMgmt7	Unit members often have to rely on leadership to resolve disagreements

Table A-1, cont.*Command Climate Scale Items*

6. Adaptability	
Adapt2	Leaders expect unit members to quickly respond to changing demands
Adapt3	Unit members effectively adjust when task assignments change
Adapt4	Members of the unit get the job done even when faced with unexpected situations
Adapt5	Unit members can quickly switch gears to respond to unexpected events
Adapt6	Members of my unit have difficulty coping with change
Adapt7	Unit leaders are adaptable
7. Behavioral health orientation	
BehHealth2	Leaders encourage unit members to seek help for behavioral health issues when necessary
BehHealth3	Members of my unit encourage one another to seek help for behavioral health issues when necessary
BehHealth4	Unit members believe their careers will suffer if they seek treatment for behavioral health issues
BehHealth5	When unit members seek treatment for mental health issues, leaders hold it against them
BehHealth6	Leaders pay attention to the mental health of unit members
BehHealth7	Unit leaders effectively balance mission requirements with the health and welfare of unit members
8. Stress management	
StressMgmt2	Leaders help unit members to be professional in stressful situations
StressMgmt3	Leaders coach unit members on healthy ways to deal with stress
StressMgmt4	Unit leaders make stressful situations worse
StressMgmt5	When unit members experience stress, leaders encourage them to maintain focus on the mission
StressMgmt6	Members of this unit help each other through stressful events
StressMgmt7	Leaders don't seem to care how stressful situations affect unit members

Soldiers were provided the same instructions and responses options to complete the single-item measures as they were to complete the multi-item scales. The single items can be seen in Table A-2.

Table A-2

Command Climate Single Items

1. Ethical leadership	Unit leadership expects all unit members to behave ethically
2. Trust	Members of this unit trust one another
3. Safety	Members of this unit effectively maintain a safe work environment
4. Learning orientation	Leaders encourage unit members to help each other learn new skills
5. Conflict management	Members of this unit effectively manage conflict
6. Adaptability	Members of this unit effectively adapt to changes in situations
7. Behavioral health orientation	Unit members are encouraged to prioritize mental/behavioral health
8. Stress management	Leaders help unit members deal with stress in an effective manner

Soldiers were provided with the following instructions to complete the command climate diagnostic items:

INSTRUCTIONS: Please use the scales provided to answer the following questions about Officers and NCOs in your company. Mark your response for each on the scannable form.

If the item does not apply to Officers or NCOs, or is something you do not know, please select answer “F” for “N/A - Don’t know.”

Not at all (A)	Very little (B)	Somewhat (C)	Quite a bit (D)	To a great extent (E)	N/A – Don’t know (F)
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The diagnostic items can be seen in Table A-3.

Table A-3

Command Climate Diagnostic Items

1. Ethical leadership	
To what extent do Officers ?	
EthicsD1	Officers: Demonstrate ethical behavior
EthicsD2	Officers: Take immediate action to correct unethical conduct
EthicsD3	Officers: Value doing the right thing
EthicsD4	Officers: Live the Army values
EthicsD5	Officers: Make ethics a priority in our unit
To what extent do NCOs ?	
EthicsD6	NCOs: Demonstrate ethical behavior
EthicsD7	NCOs: Take immediate action to correct unethical conduct
EthicsD8	NCOs: Value doing the right thing
EthicsD9	NCOs: Live the Army values
EthicsD10	NCOs: Make ethics a priority in our unit
2. Trust	
To what extent do Unit Members do the following?	
TrustD7	E1-E4: Earn unit members trust
TrustD8	E1-E4: Follow through on their word
TrustD9	E1-E4: Have the unit’s best interest at heart

TrustD12 E1-E4: Unit Members can be relied upon to do their jobs
To what extent do **Officers** do the following?

TrustD1 Officers: Earn unit members trust

TrustD2 Officers: Follow through on their word

TrustD3 Officers: Have the units best interest at heart

TrustD10 Officers: Officers can be relied upon to do their jobs
To what extent do **NCOs** do the following?

TrustD4 NCOs: Earn unit members trust

TrustD5 NCOs: Follow through on their word

TrustD6 NCOs: Have the units best interest at heart

TrustD11 NCOs: NCOs can be relied upon to do their jobs

3. Safety

To what extent do **Officers** do the following?

SafetyD1 Officers: Address safety issues quickly

SafetyD2 Officers: Make safety a priority

SafetyD3 Officers: Prioritize getting the job done quickly over safely

SafetyD4 Officers: Follow safety procedures

SafetyD5 Officers: Effectively balance safety with mission requirements

To what extent do **NCOs** do the following?

SafetyD6 NCOs: Address safety issues quickly

SafetyD7 NCOs: Make safety a priority

SafetyD8 NCOs: Prioritize getting the job done quickly over safely

SafetyD9 NCOs: Follow safety procedures

SafetyD10 NCOs: Effectively balance safety with mission requirements

4. Learning orientation

To what extent do **Officers** do the following?

LearnOrD1 Officers: Discuss lessons-learned

LearnOrD2 Officers: Encourage unit members to learn from one another

LearnOrD3 Officers: Treat mistakes as opportunities to learn

LearnOrD4 Officers: Prioritize disciplining failure over learning and improvement
To what extent do **NCOs** do the following?

LearnOrD5 NCOs: Discuss lessons learned

LearnOrD6 NCOs: Encourage unit members to learn from one another

LearnOrD7 NCOs: Treat mistakes as opportunities to learn

LearnOrD8 NCOs: Prioritize disciplining failure over learning and improvement

5. Conflict management

To what extent do **Unit Members** do the following?

ConfMgmtD9 E1-E4: Create conflict

ConfMgmtD10 E1-E4: Allow conflict to get in the way of mission completion

ConfMgmtD11 E1-E4: Work out disagreements themselves

To what extent do **Officers** do the following?

ConfMgmtD1 Officers: Create conflict

ConfMgmtD2 Officers: Allow conflict between unit leaders to affect the unit

ConfMgmtD3 Officers: Allow conflict to get in the way of mission completion

ConfMgmtD4 Officers: Encourage unit members to resolve their conflict themselves

To what extent do **NCOs** do the following?

ConfMgmtD5 NCOs: Create conflict

ConfMgmtD6 NCOs: Allow conflict between unit leaders to affect the unit

ConfMgmtD7 NCOs: Allow conflict to get in the way of mission completion

ConfMgmtD8 NCOs: Encourage unit members to resolve their conflict themselves

6. Adaptability

To what extent do **Officers** do the following?

AdaptD1 Officers: Remain calm and focused when faced with unexpected challenges.

AdaptD2 Officers: Provide guidance to help unit members easily adjust to new situations.

AdaptD3 Officers: Train the unit to adapt to unexpected situations.

AdaptD4 Officers: Train the unit to adapt to changing missions.

AdaptD5 Officers: Easily adapt to new equipment.

AdaptD6 Officers: Easily adapt to new procedures.
 AdaptD7 Officers: Have a hard time adjusting to unexpected challenges.
 To what extent do **NCOs** do the following?

AdaptD8 NCOs: Remain calm and focused when faced with unexpected challenges.
 AdaptD9 NCOs: Provide guidance to help unit members easily adjust to new situations.
 AdaptD10 NCOs: Train the unit to adapt to unexpected situations.
 AdaptD11 NCOs: Train the unit to adapt to changing missions.
 AdaptD12 NCOs: Easily adapt to new equipment.
 AdaptD13 NCOs: Easily adapt to new procedures.
 AdaptD14 NCOs: Have a hard time adjusting to unexpected challenges.

7. Behavioral health orientation

To what extent do **Officers** do the following?

BehHealthD1 Officers: Inform unit members about available behavioral health resources
 BehHealthD2 Officers: Pay attention to the mental health of unit members
 BehHealthD3 Officers: Encourage unit members to live a healthy lifestyle
 BehHealthD4 Officers: Associate behavioral health services with weakness
 BehHealthD5 Officers: Support unit members who are using behavioral health services
 To what extent do **NCOs** do the following?

BehHealthD6 NCOs: Inform unit members about available behavioral health resources
 BehHealthD7 NCOs: Pay attention to the mental health of unit members
 BehHealthD8 NCOs: Encourage unit members to live a healthy lifestyle
 BehHealthD9 NCOs: Associate behavioral health services with weakness
 BehHealthD10 NCOs: Support unit members who are using behavioral health services

8. Stress management

To what extent do **Officers** do the following?

StressMgmtD1 Officers: Add unnecessary stress
 StressMgmtD2 Officers: Remain level-headed when under stress
 StressMgmtD3 Officers: Talk about healthy ways to handle stress

StressMgmtD4	Officers: Care about the stress levels of unit members
StressMgmtD5	Officers: Help unit members to stay calm when they experience stressful circumstances
StressMgmtD6	Officers: Care about how the demanding pace of work affects unit members
To what extent do NCOs do the following?	
StressMgmtD7	NCOs: Add unnecessary stress
StressMgmtD8	NCOs: Remain level-headed when under stress
StressMgmtD9	NCOs: Talk about healthy ways to handle stress
StressMgmtD10	NCOs: Care about the stress levels of unit members
StressMgmtD11	NCOs: Help unit members to stay calm when they experience stressful circumstances
StressMgmtD12	NCOs: Care about how the demanding pace of work affects unit members

Appendix B. Scale and Single-Item Statistics

Table B-1

Item-Level Descriptive Statistics for Eight Command Climate Dimensions

Item	<i>N</i>	Mean	<i>SD</i>	Skewness		Kurtosis		% 'NA/Don't Know'
				Statistic	<i>SE</i>	Statistic	<i>SE</i>	
Ethical Leadership								
Ethics1*	1332	4.24	1.02	-1.80	0.07	3.13	0.13	0.74
Ethics2	1334	3.83	1.11	-0.90	0.07	0.14	0.13	0.66
Ethics3	1337	3.94	1.06	-1.07	0.07	0.72	0.13	0.44
Ethics4	1334	3.93	1.09	-1.08	0.07	0.63	0.13	0.66
Ethics5	1334	3.85	1.12	-0.99	0.07	0.36	0.13	0.74
Ethics6	1324	3.53	1.13	-0.50	0.07	-0.57	0.13	1.85
Ethics7	1302	3.49	1.11	-0.49	0.07	-0.40	0.14	3.84
Trust								
Trust1*	1318	3.52	1.12	-0.58	0.07	-0.36	0.13	1.92
Trust2	1323	3.47	1.06	-0.49	0.07	-0.25	0.13	1.41
Trust3	1325	3.57	1.13	-0.61	0.07	-0.33	0.13	0.81
Trust4	1331	3.55	1.05	-0.57	0.07	-0.19	0.13	1.25
Trust5	1329	3.44	1.15	-0.51	0.07	-0.51	0.13	1.40
Trust6	1332	3.63	1.04	-0.63	0.07	-0.05	0.13	1.40
Trust7	1327	3.48	1.07	-0.55	0.07	-0.18	0.13	1.77
Safety								
Safety1*	1335	3.98	0.88	-0.98	0.07	1.24	0.13	0.74
Safety2	1335	3.91	0.91	-0.84	0.07	0.71	0.13	0.88
Safety3	1334	3.87	0.94	-0.84	0.07	0.68	0.13	1.11
Safety4	1324	3.84	0.98	-0.82	0.07	0.42	0.13	1.77
Safety5	1331	3.21	1.19	-0.23	0.07	-0.87	0.13	1.33
Safety6	1332	3.17	1.21	-0.16	0.07	-0.96	0.13	1.33
Safety7	1337	3.91	0.91	-0.88	0.07	0.89	0.13	0.88
Safety8	1334	3.91	0.96	-0.96	0.07	0.89	0.13	0.96
Safety9	1336	3.95	0.89	-0.90	0.07	0.99	0.13	0.81

Note. *Single-item measure. SD = Standard deviation; SE = Standard error; NA = Not applicable.

Table B-1, cont.*Item-Level Descriptive Statistics for Eight Command Climate Dimensions*

				Skewness		Kurtosis		% 'NA/Don't Know'
Item	<i>N</i>	Mean	<i>SD</i>	Statistic	<i>SE</i>	Statistic	<i>SE</i>	
Learning orientation								
LearnOr1*	1341	4.07	0.94	-1.24	0.07	1.63	0.13	0.66
LearnOr2	1342	4.09	0.91	-1.29	0.07	2.06	0.13	0.37
LearnOr3	1342	4.03	0.92	-1.04	0.07	1.12	0.13	0.81
LearnOr4	1342	4.12	0.90	-1.24	0.07	1.88	0.13	0.66
LearnOr5	1340	3.53	1.19	-0.68	0.07	-0.35	0.13	0.88
LearnOr6	1336	3.50	1.16	-0.57	0.07	-0.47	0.13	1.33
Conflict management								
ConfMgmt1*	1311	3.64	1.03	-0.66	0.07	0.00	0.14	1.18
ConfMgmt2	1309	3.61	1.06	-0.61	0.07	-0.18	0.14	1.92
ConfMgmt3	1304	3.51	1.08	-0.49	0.07	-0.37	0.14	3.09
ConfMgmt4	1307	3.45	1.11	-0.42	0.07	-0.51	0.14	2.51
ConfMgmt5	1310	3.72	1.11	-0.61	0.07	-0.41	0.14	1.84
ConfMgmt6	1306	3.39	1.11	-0.31	0.07	-0.59	0.14	2.80
ConfMgmt7	1297	3.67	1.12	-0.53	0.07	-0.52	0.14	3.68
Adaptability								
Adapt1*	1324	3.91	0.97	-0.88	0.07	0.62	0.13	1.26
Adapt2	1319	4.18	0.82	-1.15	0.07	2.02	0.13	1.55
Adapt3	1319	3.83	0.97	-0.83	0.07	0.53	0.13	1.41
Adapt4	1329	4.08	0.85	-1.03	0.07	1.51	0.13	1.40
Adapt5	1329	3.98	0.91	-0.95	0.07	1.07	0.13	1.62
Adapt6	1322	3.49	1.14	-0.40	0.07	-0.67	0.13	2.06
Adapt7	1329	3.91	0.99	-0.96	0.07	0.74	0.13	1.47

Note. *Single-item measure. SD = Standard deviation; SE = Standard error; NA = Not applicable.

Table B-1, cont.*Item-Level Descriptive Statistics for Eight Command Climate Dimensions*

Item	<i>N</i>	Mean	<i>SD</i>	Skewness		Kurtosis		% 'NA/Don't Know'
				Statistic	<i>SE</i>	Statistic	<i>SE</i>	
Behavioral health orientation								
BehHealth1*	1289	3.52	1.20	-0.58	0.07	-0.53	0.14	2.29
BehHealth2	1294	3.74	1.12	-0.86	0.07	0.12	0.14	2.14
BehHealth3	1297	3.73	1.07	-0.80	0.07	0.16	0.14	2.21
BehHealth4	1285	3.11	1.27	-0.04	0.07	-1.01	0.14	4.28
BehHealth5	1280	3.50	1.27	-0.42	0.07	-0.85	0.14	4.57
BehHealth6	1289	3.63	1.14	-0.71	0.07	-0.14	0.14	2.88
BehHealth7	1291	3.42	1.22	-0.53	0.07	-0.62	0.14	2.36
Stress management								
StressMgmt1*	1310	3.47	1.18	-0.55	0.07	-0.52	0.14	2.00
StressMgmt2	1316	3.65	1.07	-0.68	0.07	-0.08	0.13	1.55
StressMgmt3	1314	3.45	1.18	-0.49	0.07	-0.60	0.13	1.77
StressMgmt4	1313	3.21	1.28	-0.16	0.07	-1.03	0.13	1.77
StressMgmt5	1315	3.79	0.94	-0.74	0.07	0.51	0.13	1.77
StressMgmt6	1315	3.70	1.02	-0.74	0.07	0.19	0.13	1.62
StressMgmt7	1307	3.30	1.30	-0.25	0.07	-1.04	0.14	2.30

Note. *Single-item measure. *SD* = Standard deviation; *SE* = Standard error; NA = Not applicable.

Table B-2*Intercorrelation Matrix for Full Scales at the Company and Individual Levels*

	1	2	3	4	5	6	7	8
1. Ethical leadership	—	.78	.63	.68	.71	.78	.57	.70
2. Trust	.59	—	.81	.82	.88	.85	.75	.88
3. Safety	.47	.64	—	.72	.83	.81	.73	.81
4. Learning orientation	.46	.65	.62	—	.82	.86	.71	.84
5. Conflict management	.45	.67	.62	.67	—	.85	.80	.91
6. Adaptability	.42	.56	.58	.64	.60	—	.69	.84
7. Behavioral health orientation	.46	.63	.60	.65	.64	.59	—	.85
8. Stress management	.50	.70	.62	.69	.70	.64	.78	—

Note. All correlations are statistically significant at $p < .01$. Individual-level correlations are below the diagonal.

Company-level correlations are above the diagonal.

Table B-3*Intercorrelation Matrix for Single Items at the Company and Individual Levels*

	1	2	3	4	5	6	7	8
1. Ethical leadership	—	.57	.50	.60	.51	.50	.32	.33
2. Trust	.28	—	.66	.71	.83	.81	.51	.70
3. Safety	.26	.45	—	.65	.72	.71	.59	.54
4. Learning orientation	.27	.39	.41	—	.68	.63	.55	.56
5. Conflict management	.23	.49	.47	.47	—	.80	.64	.81
6. Adaptability	.25	.44	.41	.42	.50	—	.52	.70
7. Behavioral health orientation	.21	.40	.38	.41	.49	.39	—	.71
8. Stress management	.29	.49	.40	.45	.53	.44	.63	—

Note. All correlations are statistically significant at $p < .01$. Individual-level correlations are below the diagonal. Company-level correlations are above the diagonal.

Table B-4*Exploratory Factor Analysis Factor Loadings (Pattern Matrix) and Communalities*

	1	2	3	4	5	6	7	Communalities	
	Behavioral health & stress management	Safety	Trust	Ethical leadership	Adaptability	Learning orientation	Conflict management	Initial	Extraction
Ethics2				.869				.72	.77
Ethics3				.913				.76	.82
Ethics4				.885				.72	.77
Ethics5				.836				.69	.73
Trust2			.783					.69	.70
Trust3			.676					.72	.74
Trust4			.888					.74	.77
Trust5			.764					.72	.72
Trust6			.862					.73	.77
Trust7			.824					.73	.75
Safety2		.872						.74	.74
Safety3		.879						.76	.75
Safety4		.678						.62	.62
Safety7		.789						.65	.68
Safety8		.803						.71	.72
Safety9		.766						.66	.66
LearnOr2						.929		.68	.75
LearnOr3						.815		.63	.67
LearnOr4						.800		.67	.71
LearnOr5	.317					.326		.54	.50
LearnOr6						.404		.56	.54
ConfMgmt2							.728	.71	.74
ConfMgmt3							.876	.72	.78
ConfMgmt4							.768	.66	.71
ConfMgmt7_R								.31	.25

Note. Loadings under .30 are suppressed.

Table B-4, cont.*Exploratory Factor Analysis Factor Loadings (Pattern Matrix) and Communalities*

	1	2	3	4	5	6	7	Communalities	
	Behavioral health & stress management	Safety	Trust	Ethical leadership	Adaptability	Learning orientation	Conflict management	Initial	Extraction
Adapt3					.652			.63	.66
Adapt4					.877			.63	.72
Adapt5					.877			.65	.74
Adapt7	.316				.405			.56	.56
BehHealth2	.975							.74	.70
BehHealth3	.809							.68	.58
BehHealth6	.787							.65	.63
BehHealth7	.834							.68	.68
StressMgmt2	.714							.73	.71
StressMgmt3	.800							.72	.70
StressMgmt4_R	.529							.51	.42
StressMgmt5	.313							.40	.36
StressMgmt6	.389							.58	.56
StressMgmt7_R	.606							.54	.45

Note. Loadings under .30 are suppressed.

Table B-5*Factor Intercorrelation Matrix*

Factor	1	2	3	4	5	6	7
1. Behavioral health & stress management	—						
2. Safety	.67	—					
3. Trust	.72	.66	—				
4. Ethical leadership	.53	.50	.61	—			
5. Adaptability	.61	.59	.52	.40	—		
6. Learning orientation	.69	.65	.62	.47	.64	—	
7. Conflict management	.73	.63	.71	.44	.56	.66	—

Appendix C. Outcomes

Table C-1

Intra-Class Correlations for Dependent Variables

	<i>ICC(1)</i>	<i>F for ICC(1)</i>	<i>ICC(2)</i>
Cohesion	0.13	4.56*	0.78
Unit resilience (Soldier)	0.07	2.83*	0.65
Unit performance (Soldier)	0.12	4.43*	0.77
Collective efficacy	0.09	3.34*	0.70
Affective commitment	0.03	1.69*	0.41
Continuance commitment	0.01	1.25	0.20
Job satisfaction	0.03	1.83*	0.45
Career intentions	0.02	1.60*	0.33
Well-being	0.01	1.36*	0.26
Engagement	0.03	1.78*	0.44
OCB	0.03	1.69*	0.41
Withdrawal	0.02	1.45*	0.31
CWB	0.03	1.65*	0.40
Mutual trust	0.11	3.86*	0.74
Morale	0.08	3.15*	0.68
Stress amount	0.02	1.45*	0.31
Stress impact	0.01	1.32	0.24
Satisfaction with leader	0.08	2.98*	0.66
Safety incidents	0.10	3.69*	0.73
Unit performance (Officer)	0.23	2.19*	0.54

Note. * $p < .05$. ICC = Intra-class correlation coefficient.

Table C-2*Intercorrelations among Company-Level Dependent Variables*

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. Unit resilience	—														
2. Unit performance	.83	—													
3. Unit performance (Officer)	.51	.60	—												
4. Affective commitment	.71	.58	.16	—											
5. Continuance commitment	.30	.14	.16	.41	—										
6. Job satisfaction	.81	.67	.47	.71	.35	—									
7. Well-being	.71	.55	.20	.68	.40	.75	—								
8. Withdrawal	-.32	-.42	.19	-.43	-.01	-.18	-.29	—							
9. Mutual trust	.83	.84	.49	.65	.15	.66	.61	-.37	—						
10. Morale	.84	.73	.41	.69	.39	.79	.68	-.22	.72	—					
11. Cohesion	.92	.89	.57	.63	.19	.69	.61	-.36	.91	.82	—				
12. Collective efficacy	.91	.87	.58	.62	.26	.76	.61	-.39	.88	.79	.92	—			
13. Career intentions	.49	.42	-.04	.76	.38	.56	.65	-.50	.44	.57	.43	.43	—		
14. Engagement	.73	.62	.33	.83	.40	.83	.74	-.31	.63	.77	.65	.63	.71	—	
15. OCB	.50	.36	.24	.61	.32	.52	.51	-.24	.55	.49	.45	.46	.50	.63	—

Note. Correlations with a magnitude of .29 to .33 were significant at $p < .05$, and correlations with a magnitude or .34 or larger were significant at $p < .01$. OCB = Organizational citizenship behavior.

Table C-2, cont.

Interrcorrelations among Company-Level Dependent Variables

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
16. CWB	-.22	-.25	.28	-.38	.01	-.17	-.21	.81	-.23	-.05	-.19	-.25	-.39	-.25	-.12	—									
17. Stress amount	-.41	-.42	-.20	-.12	.07	-.26	-.38	.13	-.34	-.44	-.44	-.40	-.19	-.23	.05	.03	—								
18. Stress impact	-.46	-.48	-.09	-.31	-.04	-.38	-.42	.33	-.45	-.41	-.45	-.54	-.31	-.33	-.16	.34	.65	—							
19. Leader satisfaction	.84	.72	.35	.66	.23	.74	.58	-.32	.70	.85	.82	.82	.51	.74	.46	-.17	-.48	-.51	—						
20. Safety incidents (Soldier)	-.57	-.47	-.12	-.49	-.28	-.51	-.54	.24	-.48	-.45	-.54	-.52	-.44	-.54	-.35	.30	.19	.32	-.52	—					
21. Article 15s	-.13	-.10	-.14	-.10	.11	-.16	-.13	.11	-.19	-.06	-.18	-.14	-.20	-.04	-.16	.06	-.17	-.07	.04	.08	—				
22. Unit performance [†]	-.04	.05	.35	-.17	.05	-.04	-.08	.25	-.09	.07	-.06	-.11	-.10	-.07	.03	.20	.08	.28	-.14	.15	.02	—			
23. Unit readiness [†]	-.06	.14	.18	-.21	-.17	-.08	-.15	.05	-.01	.04	.02	-.07	-.03	-.10	.00	.10	.07	.29	-.08	.13	-.05	.70	—		
24. Unit training performance [†]	-.01	.10	.33	-.21	-.02	-.02	-.09	.32	-.03	.12	-.00	-.08	-.14	-.06	.04	.35	.04	.26	-.09	.19	.01	.88	.72	—	
25. Safety incidents [†]	-.01	-.14	.00	-.09	.09	.02	-.05	.24	-.14	-.00	-.14	-.12	-.14	.02	-.17	.18	-.19	-.16	-.07	.23	.26	-.34	-.45	-.22	—
26. Disciplinary actions [†]	.06	.15	.24	.15	.19	.18	-.02	-.23	.05	.11	.08	.12	.24	.18	-.01	-.14	-.08	.14	.06	.04	.03	.03	.08	-.07	.07

Note. Correlations with a magnitude of .29 to .33 were significant at $p < .05$, and correlations with a magnitude or .34 or larger were significant at $p < .01$. [†]Variable was rated by the battalion commander. CWB = Counterproductive work behavior.

Appendix D. Item Level Descriptive Statistics

Table D-1

Item-Level Descriptive Statistics for Diagnostic Items (Individual level)

	<i>N</i>	Mean	<i>SD</i>	Skewness		Kurtosis	
				Statistic	<i>SE</i>	Statistic	<i>SE</i>
Ethical leadership							
EthicsD1	1273	4.18	0.94	-1.25	0.07	1.52	0.14
EthicsD2	1263	4.02	0.99	-0.95	0.07	0.56	0.14
EthicsD3	1287	4.20	0.92	-1.23	0.07	1.42	0.14
EthicsD4	1284	4.10	0.94	-0.99	0.07	0.71	0.14
EthicsD5	1278	3.94	1.02	-0.85	0.07	0.23	0.14
EthicsD6	1329	3.88	1.03	-0.74	0.07	0.07	0.13
EthicsD7	1327	3.98	1.01	-0.87	0.07	0.29	0.13
EthicsD8	1330	3.94	1.02	-0.85	0.07	0.27	0.13
EthicsD9	1327	3.86	1.05	-0.73	0.07	-0.05	0.13
EthicsD10	1326	3.77	1.09	-0.66	0.07	-0.21	0.13
Trust							
TrustD1	1310	3.80	1.03	-0.66	0.07	-0.02	0.14
TrustD2	1306	3.81	1.03	-0.73	0.07	0.14	0.14
TrustD3	1299	3.85	1.08	-0.81	0.07	0.06	0.14
TrustD4	1340	3.79	1.06	-0.76	0.07	0.08	0.13
TrustD5	1340	3.69	1.09	-0.61	0.07	-0.27	0.13
TrustD6	1328	3.73	1.10	-0.61	0.07	-0.34	0.13
TrustD7	1331	3.67	0.98	-0.49	0.07	-0.15	0.13
TrustD8	1336	3.52	1.01	-0.31	0.07	-0.39	0.13
TrustD9	1328	3.27	1.15	-0.19	0.07	-0.73	0.13
TrustD10	1304	4.00	0.98	-1.08	0.07	1.06	0.14
TrustD11	1336	3.94	1.02	-1.02	0.07	0.72	0.13
TrustD12	1334	3.85	0.91	-0.77	0.07	0.66	0.13

Note. SD = Standard deviation; SE = Standard error.

Table D-1, cont.*Item-Level Descriptive Statistics for Diagnostic Items (Individual level)*

	<i>N</i>	Mean	<i>SD</i>	Skewness		Kurtosis	
				Statistic	<i>SE</i>	Statistic	<i>SE</i>
Safety							
SafetyD1	1304	4.06	0.94	-1.00	0.07	0.88	0.14
SafetyD2	1313	4.10	0.92	-1.06	0.07	1.02	0.13
SafetyD3	1305	3.36	1.33	-0.37	0.07	-1.05	0.14
SafetyD4	1313	4.08	0.90	-1.01	0.07	1.08	0.13
SafetyD5	1305	3.98	0.95	-0.96	0.07	0.85	0.14
SafetyD6	1333	4.06	0.91	-0.92	0.07	0.68	0.13
SafetyD7	1335	3.96	0.98	-0.89	0.07	0.45	0.13
SafetyD8	1334	3.25	1.33	-0.18	0.07	-1.17	0.13
SafetyD9	1338	3.98	0.91	-0.76	0.07	0.35	0.13
SafetyD10	1333	3.97	0.93	-0.82	0.07	0.42	0.13
Learning orientation							
LearnOrD1	1302	3.68	1.07	-0.60	0.07	-0.23	0.14
LearnOrD2	1305	3.86	1.04	-0.84	0.07	0.26	0.14
LearnOrD3	1303	3.68	1.13	-0.68	0.07	-0.22	0.14
LearnOrD4	1277	3.16	1.31	-0.16	0.07	-1.10	0.14
LearnOrD5	1337	3.95	0.97	-0.87	0.07	0.49	0.13
LearnOrD6	1339	4.02	0.97	-1.04	0.07	0.88	0.13
LearnOrD7	1340	3.71	1.14	-0.76	0.07	-0.13	0.13
LearnOrD8	1316	3.01	1.30	0.00	0.07	-1.07	0.13

Note. SD = Standard deviation; SE = Standard error.

Table D-1, cont.*Item-Level Descriptive Statistics for Diagnostic Items (Individual level)*

	<i>N</i>	Mean	<i>SD</i>	Skewness		Kurtosis	
				Statistic	<i>SE</i>	Statistic	<i>SE</i>
Conflict management							
ConfMgmtD1	1279	4.17	1.04	-1.29	0.07	1.10	0.14
ConfMgmtD2	1278	4.23	0.99	-1.29	0.07	1.09	0.14
ConfMgmtD3	1280	4.34	0.92	-1.49	0.07	1.90	0.14
ConfMgmtD4	1242	3.16	1.22	-0.29	0.07	-0.80	0.14
ConfMgmtD5	1313	3.89	1.16	-0.82	0.07	-0.28	0.13
ConfMgmtD6	1316	4.09	1.07	-1.06	0.07	0.30	0.13
ConfMgmtD7	1315	4.22	1.01	-1.29	0.07	1.01	0.13
ConfMgmtD8	1289	3.18	1.23	-0.31	0.07	-0.82	0.14
ConfMgmtD9	1303	3.41	1.19	-0.25	0.07	-0.87	0.14
ConfMgmtD10	1305	3.78	1.15	-0.63	0.07	-0.56	0.14
ConfMgmtD11	1305	3.35	1.17	-0.40	0.07	-0.60	0.14
Adaptability							
AdaptD1	1251	3.87	1.01	-0.89	0.07	0.53	0.14
AdaptD2	1260	3.77	1.05	-0.74	0.07	0.09	0.14
AdaptD3	1256	3.69	1.10	-0.67	0.07	-0.16	0.14
AdaptD4	1260	3.70	1.08	-0.70	0.07	-0.02	0.14
AdaptD5	1255	3.73	1.02	-0.70	0.07	0.23	0.14
AdaptD6	1260	3.74	1.02	-0.72	0.07	0.25	0.14
AdaptD7	1256	3.64	1.17	-0.61	0.07	-0.50	0.14
AdaptD8	1323	3.86	0.99	-0.83	0.07	0.47	0.13
AdaptD9	1325	3.87	0.98	-0.79	0.07	0.27	0.13
AdaptD10	1325	3.86	0.98	-0.82	0.07	0.44	0.13
AdaptD11	1325	3.88	0.98	-0.85	0.07	0.54	0.13
AdaptD12	1318	3.85	0.96	-0.76	0.07	0.41	0.13
AdaptD13	1323	3.79	0.99	-0.72	0.07	0.27	0.13
AdaptD14	1317	3.76	1.09	-0.65	0.07	-0.31	0.13
AdaptD15	1319	3.48	1.06	-0.41	0.07	-0.32	0.13
AdaptD16	1322	3.60	0.98	-0.47	0.07	-0.04	0.13
AdaptD17	1323	3.53	1.11	-0.30	0.07	-0.68	0.13

Note. *SD* = Standard deviation; *SE* = Standard error.

Table D-1, cont.*Item-Level Descriptive Statistics for Diagnostic Items (Individual level)*

	<i>N</i>	Mean	<i>SD</i>	Skewness		Kurtosis	
				Statistic	<i>SE</i>	Statistic	<i>SE</i>
Behavioral health orientation							
BehHealthD1	1252	3.54	1.18	-0.58	0.07	-0.47	0.14
BehHealthD2	1251	3.57	1.17	-0.56	0.07	-0.49	0.14
BehHealthD3	1255	3.85	1.05	-0.88	0.07	0.34	0.14
BehHealthD4	1241	3.67	1.29	-0.57	0.07	-0.87	0.14
BehHealthD5	1206	3.73	1.09	-0.72	0.07	-0.01	0.14
BehHealthD6	1280	3.69	1.14	-0.70	0.07	-0.22	0.14
BehHealthD7	1282	3.74	1.13	-0.80	0.07	0.01	0.14
BehHealthD8	1284	3.88	1.02	-0.82	0.07	0.27	0.14
BehHealthD9	1270	3.56	1.35	-0.46	0.07	-1.03	0.14
BehHealthD10	1256	3.74	1.10	-0.71	0.07	-0.13	0.14
Stress management							
StressMgmtD1	1270	3.42	1.29	-0.37	0.07	-0.97	0.14
StressMgmtD2	1252	3.60	1.03	-0.53	0.07	-0.10	0.14
StressMgmtD3	1273	3.34	1.18	-0.29	0.07	-0.76	0.14
StressMgmtD4	1273	3.48	1.17	-0.42	0.07	-0.62	0.14
StressMgmtD5	1268	3.49	1.10	-0.37	0.07	-0.48	0.14
StressMgmtD6	1268	3.33	1.25	-0.39	0.07	-0.80	0.14
StressMgmtD7	1303	3.18	1.32	-0.16	0.07	-1.08	0.14
StressMgmtD8	1303	3.61	1.06	-0.55	0.07	-0.19	0.14
StressMgmtD9	1305	3.38	1.20	-0.35	0.07	-0.77	0.14
StressMgmtD10	1305	3.46	1.20	-0.49	0.07	-0.59	0.14
StressMgmtD11	1306	3.53	1.15	-0.51	0.07	-0.50	0.14
StressMgmtD12	1282	3.40	1.25	-0.44	0.07	-0.75	0.14

Note. SD = Standard deviation; SE = Standard error.

Table D-2*Intra-class Correlation Coefficients (ICCs) for Diagnostic Items*

	<i>ICC(1)</i>	<i>F for ICC(1)</i>	<i>ICC(2)</i>
EthicsD1	0.04	2.08*	0.52
EthicsD2	0.04	1.91*	0.48
EthicsD3	0.03	1.77*	0.44
EthicsD4	0.03	1.67*	0.40
EthicsD5	0.02	1.49*	0.33
EthicsD6	0.06	2.65*	0.62
EthicsD7	0.04	1.96*	0.49
EthicsD8	0.05	2.25*	0.56
EthicsD9	0.05	2.36*	0.58
EthicsD10	0.05	2.24*	0.55
TrustD1	0.05	2.24*	0.55
TrustD2	0.06	2.50*	0.60
TrustD3	0.07	2.69*	0.63
TrustD4	0.05	2.29*	0.56
TrustD5	0.06	2.44*	0.59
TrustD6	0.04	2.07*	0.52
TrustD7	0.05	2.24*	0.56
TrustD8	0.05	2.30*	0.57
TrustD9	0.05	2.34*	0.57
TrustD10	0.06	2.45*	0.59
TrustD11	0.06	2.57*	0.61
TrustD12	0.05	2.36*	0.58
SafetyD1	0.04	1.93*	0.48
SafetyD2	0.04	2.05*	0.51
SafetyD3	0.03	1.82*	0.45
SafetyD4	0.04	1.88*	0.47
SafetyD5	0.04	1.97*	0.49
SafetyD6	0.04	1.98*	0.50
SafetyD7	0.04	1.93*	0.48
SafetyD8	0.03	1.79*	0.44
SafetyD9	0.04	2.00*	0.50
SafetyD10	0.05	2.38*	0.58

Table D-2, cont.*Intra-class Correlation Coefficients (ICCs) for Diagnostic Items*

	<i>ICC(1)</i>	<i>F for ICC(1)</i>	<i>ICC(2)</i>
LearnOrD1	0.03	1.73*	0.42
LearnOrD2	0.05	2.29*	0.56
LearnOrD3	0.03	1.83*	0.46
LearnOrD4	0.02	1.43*	0.30
LearnOrD5	0.04	2.01*	0.50
LearnOrD6	0.05	2.23*	0.55
LearnOrD7	0.03	1.85*	0.46
LearnOrD8	0.01	1.29	0.23
ConfMgmtD1	0.04	2.09*	0.52
ConfMgmtD2	0.02	1.48*	0.33
ConfMgmtD3	0.02	1.48*	0.32
ConfMgmtD4	0.00	1.08	0.08
ConfMgmtD5	0.05	2.25*	0.56
ConfMgmtD6	0.04	1.87*	0.47
ConfMgmtD7	0.04	1.90*	0.48
ConfMgmtD8	0.01	1.25	0.21
ConfMgmtD9	0.03	1.74*	0.43
ConfMgmtD10	0.05	2.28*	0.56
ConfMgmtD11	0.01	1.16	0.14
AdaptD1	0.03	1.85*	0.46
AdaptD2	0.05	2.26*	0.56
AdaptD3	0.04	2.00*	0.50
AdaptD4	0.04	2.00*	0.50
AdaptD5	0.02	1.60*	0.38
AdaptD6	0.04	1.98*	0.50
AdaptD7	0.04	2.09*	0.52
AdaptD8	0.06	2.44*	0.59
AdaptD9	0.06	2.50*	0.60
AdaptD10	0.05	2.24*	0.55
AdaptD11	0.05	2.19*	0.54
AdaptD12	0.04	2.10*	0.52
AdaptD13	0.04	1.98*	0.50

Table D-2, cont.*Intra-class Correlation Coefficients (ICCs) for Diagnostic Items*

	<i>ICC(1)</i>	<i>F for ICC(1)</i>	<i>ICC(2)</i>
AdaptD14	0.04	1.93*	0.48
AdaptD15	0.04	1.97*	0.49
AdaptD16	0.04	1.94*	0.49
AdaptD17	0.03	1.62*	0.38
BehHealthD1	0.04	1.91*	0.48
BehHealthD2	0.04	1.89*	0.47
BehHealthD3	0.04	1.87*	0.47
BehHealthD4	0.02	1.52*	0.34
BehHealthD5	0.04	2.02*	0.51
BehHealthD6	0.06	2.44*	0.59
BehHealthD7	0.04	1.95*	0.49
BehHealthD8	0.04	1.95*	0.49
BehHealthD9	0.02	1.51*	0.34
BehHealthD10	0.05	2.14*	0.53
StressMgmtD1	0.03	1.71*	0.42
StressMgmtD2	0.05	2.27*	0.56
StressMgmtD3	0.05	2.29*	0.56
StressMgmtD4	0.03	1.76*	0.43
StressMgmtD5	0.04	1.88*	0.47
StressMgmtD6	0.05	2.17*	0.54
StressMgmtD7	0.04	2.09*	0.52
StressMgmtD8	0.05	2.33*	0.57
StressMgmtD9	0.04	2.03*	0.51
StressMgmtD10	0.03	1.67*	0.40
StressMgmtD11	0.03	1.71*	0.42
StressMgmtD12	0.03	1.70*	0.41

Note. * $p < .05$.

Table D-3*Item-Level Descriptive Statistics for Diagnostic Items (Company Level)*

	<i>N</i>	Mean	<i>SD</i>	Skewness		Kurtosis	
				Statistic	<i>SE</i>	Statistic	<i>SE</i>
Ethical leadership							
EthicsD1	57	4.19	0.31	-0.72	0.32	0.36	0.62
EthicsD2	57	4.03	0.29	-0.22	0.32	-0.13	0.62
EthicsD3	57	4.21	0.29	-0.55	0.32	0.05	0.62
EthicsD4	57	4.10	0.27	-0.73	0.32	0.41	0.62
EthicsD5	57	3.94	0.28	-0.47	0.32	-0.43	0.62
EthicsD6	57	3.89	0.36	-0.29	0.32	-0.52	0.62
EthicsD7	57	3.98	0.30	-0.30	0.32	-0.26	0.62
EthicsD8	57	3.95	0.33	-0.35	0.32	-0.58	0.62
EthicsD9	57	3.86	0.35	-0.37	0.32	-0.38	0.62
EthicsD10	57	3.77	0.35	-0.34	0.32	-0.40	0.62
Trust							
TrustD1	57	3.80	0.34	0.00	0.32	0.95	0.62
TrustD2	57	3.81	0.37	-0.15	0.32	-0.21	0.62
TrustD3	57	3.84	0.40	-0.25	0.32	0.09	0.62
TrustD4	57	3.79	0.33	-0.19	0.32	-0.44	0.62
TrustD5	57	3.69	0.36	-0.23	0.32	-0.39	0.62
TrustD6	57	3.72	0.35	-0.19	0.32	-0.65	0.62
TrustD7	57	3.67	0.31	0.22	0.32	0.52	0.62
TrustD8	57	3.52	0.34	0.24	0.32	1.36	0.62
TrustD9	57	3.26	0.39	-0.15	0.32	0.18	0.62
TrustD10	57	4.00	0.34	-0.60	0.32	0.10	0.62
TrustD11	57	3.94	0.36	-0.03	0.32	-0.45	0.62
TrustD12	57	3.85	0.29	-0.62	0.32	0.19	0.62

Note. SD = Standard deviation; SE = Standard error.

Table D-3, cont.*Item-Level Descriptive Statistics for Diagnostic Items (Company Level)*

	<i>N</i>	Mean	<i>SD</i>	Skewness		Kurtosis	
				Statistic	<i>SE</i>	Statistic	<i>SE</i>
Safety							
SafetyD1	57	4.06	0.27	-0.07	0.32	-0.36	0.62
SafetyD2	57	4.11	0.26	-0.34	0.32	-0.27	0.62
SafetyD3	57	3.35	0.36	-0.11	0.32	1.02	0.62
SafetyD4	57	4.08	0.26	-0.15	0.32	-0.19	0.62
SafetyD5	57	3.97	0.28	-0.20	0.32	-0.02	0.62
SafetyD6	57	4.06	0.28	-0.04	0.32	-0.37	0.62
SafetyD7	57	3.97	0.29	-0.15	0.32	0.34	0.62
SafetyD8	57	3.25	0.39	0.52	0.32	0.74	0.62
SafetyD9	57	3.98	0.26	0.19	0.32	0.43	0.62
SafetyD10	57	3.98	0.29	0.07	0.32	-0.27	0.62
Learning orientation							
LearnOrD1	57	3.67	0.33	-0.28	0.32	-0.66	0.62
LearnOrD2	57	3.86	0.35	-0.29	0.32	-0.15	0.62
LearnOrD3	57	3.66	0.34	-0.39	0.32	-0.64	0.62
LearnOrD4	57	3.15	0.33	-0.07	0.32	-0.59	0.62
LearnOrD5	57	3.95	0.28	0.08	0.32	-0.34	0.62
LearnOrD6	57	4.03	0.30	-0.35	0.32	-0.11	0.62
LearnOrD7	57	3.72	0.33	-0.24	0.32	-0.44	0.62
LearnOrD8	57	3.04	0.34	0.81	0.32	0.72	0.62

Note. SD = Standard deviation; SE = Standard error.

Table D-3, cont.*Item-Level Descriptive Statistics for Diagnostic Items (Company Level)*

				Skewness		Kurtosis	
	<i>N</i>	Mean	<i>SD</i>	Statistic	<i>SE</i>	Statistic	<i>SE</i>
Conflict management							
ConfMgmtD1	57	4.18	0.34	-0.68	0.32	0.46	0.62
ConfMgmtD2	57	4.24	0.30	-0.04	0.32	-0.23	0.62
ConfMgmtD3	57	4.34	0.27	0.07	0.32	-0.19	0.62
ConfMgmtD4	57	3.17	0.31	0.13	0.32	-0.49	0.62
ConfMgmtD5	57	3.91	0.36	-0.78	0.32	1.47	0.62
ConfMgmtD6	57	4.09	0.31	-1.05	0.32	3.22	0.62
ConfMgmtD7	57	4.23	0.31	-0.37	0.32	1.22	0.62
ConfMgmtD8	57	3.18	0.32	-0.53	0.32	0.90	0.62
ConfMgmtD9	57	3.41	0.34	-0.10	0.32	-0.76	0.62
ConfMgmtD10	57	3.78	0.38	0.29	0.32	1.05	0.62
ConfMgmtD11	57	3.36	0.29	0.06	0.32	-0.12	0.62
Behavioral health orientation							
BehHealthD1	57	3.56	0.37	-0.10	0.32	-0.20	0.62
BehHealthD2	57	3.57	0.36	-0.06	0.32	-0.48	0.62
BehHealthD3	57	3.86	0.32	-0.26	0.32	-0.24	0.62
BehHealthD4	57	3.68	0.41	0.04	0.32	0.55	0.62
BehHealthD5	57	3.75	0.34	0.36	0.32	-0.25	0.62
BehHealthD6	57	3.71	0.38	-0.12	0.32	-0.68	0.62
BehHealthD7	57	3.75	0.35	-0.74	0.32	0.22	0.62
BehHealthD8	57	3.89	0.30	-0.33	0.32	0.34	0.62
BehHealthD9	57	3.57	0.40	0.37	0.32	0.44	0.62
BehHealthD10	57	3.76	0.34	-0.24	0.32	-0.28	0.62

Note. SD = Standard deviation; SE = Standard error.

Table D-3, cont.*Item-Level Descriptive Statistics for Diagnostic Items (Company Level)*

	<i>N</i>	Mean	<i>SD</i>	Skewness		Kurtosis	
				Statistic	<i>SE</i>	Statistic	<i>SE</i>
Stress management							
StressMgmtD1	57	3.41	0.37	0.17	0.32	0.10	0.62
StressMgmtD2	57	3.60	0.34	-0.23	0.32	-0.92	0.62
StressMgmtD3	57	3.34	0.38	-0.10	0.32	-0.49	0.62
StressMgmtD4	57	3.48	0.36	0.24	0.32	0.22	0.62
StressMgmtD5	57	3.49	0.35	-0.20	0.32	0.38	0.62
StressMgmtD6	57	3.32	0.40	-0.18	0.32	0.05	0.62
StressMgmtD7	57	3.19	0.40	-0.02	0.32	-0.70	0.62
StressMgmtD8	57	3.62	0.33	0.11	0.32	-0.25	0.62
StressMgmtD9	57	3.38	0.36	-0.05	0.32	-0.51	0.62
StressMgmtD10	57	3.47	0.33	0.21	0.32	-0.47	0.62
StressMgmtD11	57	3.54	0.32	-0.07	0.32	-0.36	0.62
StressMgmtD12	57	3.41	0.34	-0.04	0.32	-0.60	0.62
Adaptability							
AdaptD1	57	3.87	0.32	-0.17	0.32	-0.67	0.62
AdaptD2	57	3.79	0.37	-0.19	0.32	-0.36	0.62
AdaptD3	57	3.69	0.34	0.02	0.32	0.26	0.62
AdaptD4	57	3.70	0.36	0.06	0.32	-0.16	0.62
AdaptD5	57	3.73	0.32	-0.15	0.32	-0.55	0.62
AdaptD6	57	3.74	0.34	-0.07	0.32	0.09	0.62
AdaptD7	57	3.65	0.33	-0.08	0.32	0.21	0.62
AdaptD8	57	3.86	0.33	-0.17	0.32	-0.02	0.62
AdaptD9	57	3.87	0.33	-0.35	0.32	0.21	0.62
AdaptD10	57	3.85	0.34	-0.09	0.32	0.11	0.62
AdaptD11	57	3.87	0.32	0.25	0.32	-0.23	0.62
AdaptD12	57	3.86	0.30	-0.13	0.32	-0.66	0.62
AdaptD13	57	3.78	0.30	-0.16	0.32	-0.82	0.62
AdaptD14	57	3.78	0.30	-0.29	0.32	-0.47	0.62
AdaptD15	57	3.47	0.31	-0.32	0.32	0.44	0.62
AdaptD16	57	3.60	0.29	0.01	0.32	0.04	0.62
AdaptD17	57	3.53	0.29	0.14	0.32	-0.75	0.62

Table D-4*Intercorrelations among Diagnostic Items, Dimension Scales, and Single Items (Ethical Leadership)*

	1	2	3	4	5	6	7	8	9	10	11	12
1. EthicsD1	—											
2. EthicsD2	.73	—										
3. EthicsD3	.84	.77	—									
4. EthicsD4	.80	.77	.90	—								
5. EthicsD5	.78	.78	.85	.88	—							
6. EthicsD6	.60	.64	.58	.61	.68	—						
7. EthicsD7	.55	.65	.52	.59	.65	.87	—					
8. EthicsD8	.65	.67	.68	.71	.73	.93	.87	—				
9. EthicsD9	.67	.70	.68	.72	.77	.93	.86	.94	—			
10. EthicsD10	.57	.64	.59	.66	.72	.91	.88	.91	.93	—		
11. Scale	.60	.67	.72	.71	.72	.78	.68	.81	.75	.71	—	
12. Single item	.57	.57	.58	.51	.51	.55	.44	.56	.48	.47	.77	—

Note. All correlations statistically significant at $p < .01$.

Table D-5*Intercorrelations among Diagnostic Items, Dimension Scales and Single Items (Trust)*

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. TrustD1	—													
2. TrustD2	.92	—												
3. TrustD3	.87	.91	—											
4. TrustD4	.62	.64	.60	—										
5. TrustD5	.66	.69	.69	.92	—									
6. TrustD6	.64	.68	.70	.91	.94	—								
7. TrustD7	.62	.56	.56	.60	.64	.67	—							
8. TrustD8	.59	.56	.55	.54	.60	.61	.89	—						
9. TrustD9	.53	.53	.55	.54	.61	.61	.88	.89	—					
10. TrustD10	.81	.81	.82	.53	.54	.55	.48	.40	.36	—				
11. TrustD11	.67	.66	.65	.85	.89	.83	.65	.56	.52	.63	—			
12. TrustD12	.54	.50	.58	.59	.60	.65	.77	.77	.75	.47	.60	—		
13. Scale	.71	.74	.74	.85	.88	.89	.74	.74	.71	.67	.84	.78	—	
14. Single item	.67	.67	.65	.79	.79	.79	.75	.73	.72	.65	.79	.75	.95	—

Note. All correlations statistically significant at $p < .01$.

Table D-6*Intercorrelations among Diagnostic Items, Dimension Scales and Single Items (Safety)*

	1	2	3	4	5	6	7	8	9	10	11	12
1. SafetyD1	—											
2. SafetyD2	.87**	—										
3. SafetyD3	.49**	.41**	—									
4. SafetyD4	.89**	.87**	.53**	—								
5. SafetyD5	.78**	.81**	.39**	.86**	—							
6. SafetyD6	.73**	.69**	.33*	.72**	.65**	—						
7. SafetyD7	.75**	.73**	.37**	.72**	.72**	.90**	—					
8. SafetyD8	.41**	.37**	.82**	.42**	.35**	.33*	.42**	—				
9. SafetyD9	.71**	.66**	.26	.69**	.70**	.86**	.87**	.30*	—			
10. SafetyD10	.71**	.67**	.32*	.70**	.75**	.87**	.88**	.35**	.91**	—		
11. Scale	.77**	.71**	.44**	.78**	.72**	.85**	.84**	.47**	.84**	.87**	—	
12. Single item	.67**	.62**	.42**	.71**	.59**	.81**	.76**	.39**	.77**	.75**	.89**	—

Note. ** $p < .01$, * $p < .05$.

Table D-7*Intercorrelations among Diagnostic Items, Dimension Scales and Single Items (Learning Orientation)*

	1	2	3	4	5	6	7	8	9	10
1. LearnOrD1	—									
2. LearnOrD2	.83**	—								
3. LearnOrD3	.81**	.82**	—							
4. LearnOrD4	.41**	.55**	.47**	—						
5. LearnOrD5	.71**	.70**	.67**	.52**	—					
6. LearnOrD6	.64**	.66**	.60**	.57**	.86**	—				
7. LearnOrD7	.52**	.62**	.66**	.64**	.75**	.79**	—			
8. LearnOrD8	.28*	.45**	.25	.64**	.45**	.49**	.65**	—		
9. Scale	.74**	.79**	.75**	.55**	.84**	.80**	.77**	.53**	—	
10. Single item	.64**	.72**	.61**	.52**	.74**	.78**	.63**	.46**	.90**	—

Note. ** $p < .01$, * $p < .05$.

Table D-8*Intercorrelations among Diagnostic Items, Dimension Scales and Single Items (Conflict Management)*

	1	2	3	4	5	6	7	8	9	10	11	12	13
1. ConfMgmtD1	—												
2. ConfMgmtD2	.80**	—											
3. ConfMgmtD3	.71**	.81**	—										
4. ConfMgmtD4	.48**	.41**	.39**	—									
5. ConfMgmtD5	.41**	.51**	.60**	.30*	—								
6. ConfMgmtD6	.36**	.49**	.59**	.20	.87**	—							
7. ConfMgmtD7	.39**	.55**	.70**	.25	.85**	.91**	—						
8. ConfMgmtD8	.35**	.26	.44**	.73**	.33*	.27*	.29*	—					
9. ConfMgmtD9	.30*	.26	.33*	.37**	.47**	.44**	.42**	.36**	—				
10. ConfMgmtD10	.29*	.41**	.43**	.24	.50**	.54**	.58**	.16	.82**	—			
11. ConfMgmtD11	.16	.19	.14	.42**	.12	.11	.13	.32*	.46**	.42**	—		
12. Scale	.43**	.58**	.61**	.52**	.69**	.69**	.75**	.51**	.71**	.75**	.40**	—	
13. Single item	.40**	.54**	.56**	.42**	.59**	.64**	.69**	.42**	.70**	.77**	.40**	.93**	—

Note. * $p < .05$, ** $p < .01$.

Table D-9*Intercorrelations among Diagnostic Items, Dimension Scales and Single Items (Adaptability)*

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1. AdaptD1	—																		
2. AdaptD2	.79**	—																	
3. AdaptD3	.73**	.87**	—																
4. AdaptD4	.73**	.84**	.94**	—															
5. AdaptD5	.77**	.86**	.86**	.86**	—														
6. AdaptD6	.81**	.87**	.82**	.85**	.91**	—													
7. AdaptD7	.61**	.58**	.50**	.55**	.48**	.50**	—												
8. AdaptD8	.66**	.59**	.68**	.59**	.67**	.62**	.47**	—											
9. AdaptD9	.63**	.60**	.65**	.64**	.64**	.59**	.46**	.87**	—										
10. AdaptD10	.65**	.66**	.73**	.71**	.71**	.66**	.54**	.88**	.85**	—									
11. AdaptD11	.66**	.66**	.74**	.72**	.71**	.65**	.50**	.86**	.86**	.94**	—								
12. AdaptD12	.67**	.62**	.69**	.66**	.76**	.69**	.39**	.87**	.86**	.82**	.87**	—							
13. AdaptD13	.58**	.57**	.67**	.63**	.65**	.58**	.38**	.85**	.85**	.83**	.86**	.89**	—						
14. AdaptD14	.44**	.47**	.50**	.53**	.51**	.48**	.57**	.75**	.75**	.73**	.72**	.70**	.72**	—					
15. AdaptD15	.53**	.50**	.61**	.60**	.58**	.60**	.40**	.65**	.53**	.63**	.64**	.64**	.66**	.53**	—				
16. AdaptD16	.47**	.40**	.52**	.53**	.49**	.51**	.23	.63**	.58**	.56**	.58**	.58**	.60**	.41**	.77**	—			
17. AdaptD17	.44**	.49**	.50**	.51**	.44**	.45**	.46**	.44**	.48**	.50**	.50**	.39**	.41**	.52**	.60**	.65**	—		
18. Scale	.67**	.66**	.71**	.70**	.68**	.65**	.61**	.80**	.75**	.82**	.81**	.74**	.74**	.65**	.73**	.65**	.59**	—	
19. Single item	.66**	.61**	.72**	.71**	.68**	.67**	.52**	.74**	.69**	.78**	.77**	.69**	.70**	.65**	.78**	.66**	.59**	.90**	—

Note. * $p < .05$ ** $p < .01$.

Table D-10

Intercorrelations among Diagnostic Items, Dimension Scales and Single Items (Behavioral Health Orientation)

	1	2	3	4	5	6	7	8	9	10	11	12
1. BehHealthD1	—											
2. BehHealthD2	.88	—										
3. BehHealthD3	.80	.82	—									
4. BehHealthD4	.37	.34	.43	—								
5. BehHealthD5	.80	.78	.80	.50	—							
6. BehHealthD6	.78	.82	.79	.39	.77	—						
7. BehHealthD7	.68	.71	.67	.37	.67	.88	—					
8. BehHealthD8	.73	.76	.81	.39	.74	.86	.83	—				
9. BehHealthD9	.40	.38	.47	.81	.52	.53	.51	.54	—			
10. BehHealthD10	.67	.68	.66	.37	.78	.87	.88	.80	.59	—		
11. Scale	.78	.79	.67	.43	.75	.85	.83	.80	.53	.78	—	
12. Single item	.68	.61	.54	.47	.71	.67	.63	.69	.59	.65	.86	—

Note. All correlations statistically significant at $p < .01$.

Table D-11*Intercorrelations among Diagnostic Items, Dimension Scales and Single Items (Stress Management)*

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. StressMgmtD1	—													
2. StressMgmtD2	.70	—												
3. StressMgmtD3	.60	.70	—											
4. StressMgmtD4	.75	.77	.83	—										
5. StressMgmtD5	.77	.76	.82	.90	—									
6. StressMgmtD6	.74	.73	.69	.84	.87	—								
7. StressMgmtD7	.58	.54	.67	.68	.63	.60	—							
8. StressMgmtD8	.58	.72	.70	.74	.72	.70	.78	—						
9. StressMgmtD9	.61	.58	.80	.76	.76	.67	.77	.80	—					
10. StressMgmtD10	.63	.62	.66	.75	.72	.66	.78	.80	.83	—				
11. StressMgmtD11	.61	.68	.75	.76	.73	.67	.83	.85	.89	.92	—			
12. StressMgmtD12	.51	.54	.58	.74	.66	.65	.78	.80	.81	.82	.86	—		
13. Scale	.66	.72	.75	.81	.76	.71	.83	.85	.81	.84	.87	.79	—	
14. Single item	.62	.63	.71	.78	.77	.76	.79	.80	.78	.81	.83	.78	.92	—

Note. All correlations statistically significant at $p < .01$.

Table D-12

Correlations between Single Items and Scales, Diagnostic Items and Scales, and Single Items and Diagnostic Items

	Correlation Single Items with Scales	Correlation Range Diagnostic Items with Scales	Correlation Range Single Items with Diagnostic Items
1. Ethical leadership	.73	.60 - .81	.44 - .58
2. Trust	.80	.67 - .89	.65 - .79
3. Safety	.77	.44 - .87	.39 - .81
4. Learning orientation	.76	.53 - .84	.46 - .78
5. Conflict management	.79	.40 - .75	.40 - .77
6. Adaptability	.72	.61 - .82	.52 - .78
7. Behavioral health orientation	.80	.43 - .85	.47 - .71
8. Stress management	.84	.66 - .87	.62 - .83