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Non-Cognitive Predictors of Performance in Close Combat Jobs

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14. ABSTRACT
A growing body of research, including research conducted by the U.S. Army Research Institute, has demonstrated the validity of the Tailored Adaptive Personality Assessment System (TAPAS) for predicting Soldier performance. The goal of the current research was to expand this literature by examining the validity of the TAPAS for identifying high potential individuals for close combat military occupational specialties (MOS) including Infantry (MOS 11B), Cavalry Scouts (MOS 19D), and M1 Armor Crewman (MOS 19K). Results showed that the TAPAS scores predicted important Army outcomes, even after controlling for the Armed Services Vocational Aptitude Battery (ASVAB) Aptitude Area (AA) composite that is currently used for qualification into these MOS. In addition, the TAPAS also showed differential validity across these occupations, suggesting that this assessment may be useful as a classification tool for close combat MOS.

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NON-COGNITIVE PREDICTORS OF PERFORMANCE IN CLOSE COMBAT JOBS

CONTENTS

LIST OF TABLES

CONTENTS (CONTINUED)

LIST OF FIGURES

NON-COGNITIVE PREDICTORS OF PERFORMANCE IN CLOSE COMBAT JOBS

Introduction

Interest in personality as a predictor of performance has increased considerably over the past two decades. Much of this interest was galvanized by empirical evidence showing that personality constructs predict performance across a diverse array of civilian and military occupations (e.g., Barrick & Mount, 1991; Campbell & Knapp, 2001) and provide incremental validity over general cognitive ability (Schmidt & Hunter, 1998). Given these potential advantages, many organizations are now using personality measures to make decisions in high-stakes selection and classification settings.

The use of personality assessments for selection and classification inevitably calls attention to the quality of their measurement. In fact, due to the limitations of traditional personality measures, some research has criticized their use in high-stakes settings (Morgeson et al., 2007). Although these traditional personality measures are useful in research and counseling settings where respondents have little motivation to respond dishonestly, they are unsuitable for making important personnel decisions for several reasons. First, in high-stakes testing situations, research shows that faking is an important concern in traditional personality assessments; i.e., test-takers can discern the correct or socially desirable answers and, thus, increase or decrease their scores (White et al., 2008). This intentional distortion can severely undermine the utility of personality measures for personnel selection. Second, currently used scales were not constructed to measure well across all levels of the trait continuum. Specifically, because classical test theory methods are used to evaluate and choose items during scale development, only those items having moderately positive or moderately negative standing on the underlying trait continuum are retained—extreme and neutral items are discarded (Roberts et al., 1999; Stark et al., 2005). This affects the rank-order of high and low scoring individuals who are often of primary interest in selection contexts. Finally, traditional paper-and-pencil personality measures are inefficient and cumbersome to administer and maintain. They have rigid administration prescriptions in the sense that all items must be administered to every examinee in a prespecified order. This increases their vulnerability to conspiracies intended to compromise the assessment (Drasgow et al., 2009).

Given the limitations of traditional personality measures, the Tailored Adaptive Personality Assessment System (TAPAS) was developed under the Army's Small Business Innovation Research (SBIR) grant program. This assessment takes advantage of modern psychometric methods and computing technology to offer a new generation of personality measures that (a) are fake-resistant, (b) are easily customized to meet the assessment needs of diverse military occupational specialties (MOS), and (c) utilize computer-adaptive technology to efficiently measure across a broad range of trait continua. Therefore, the TAPAS is expected to have several advantages over traditional personality measures.

To mitigate the effects of faking, the TAPAS utilizes a multidimensional pairwise preference (MDPP) format that has been found to be resistant to faking (Cao & Drasgow, 2019). The MDPP format was chosen because it provides a mathematically tractable alternative for constructing and scoring adaptive tests using item response theory (Stark et al., 2005; Stark et al., 2012). An advantage of the TAPAS is that it matches the two statements in each item pair on both their social desirability and extremity on the dimensions they assess. The purpose of matching on these characteristics is to make identifying and selecting the most socially desirable responses more difficult for test-takers. This approach appears to work as research on the operational use of the TAPAS has found little evidence of score inflation, even when compared to other respondents taking the test for "research purposes only" (Drasgow et al., 2012; Trent et al., 2020).

Another advantage of the TAPAS is that it can assess a comprehensive set of personality characteristics. In the original version of the TAPAS, statement pools were developed to measure 21 personality dimensions or facets of the well-known Big Five personality framework (Goldberg, 1993). In subsequent work, several additional facets of the Big Five framework (e.g., Humility, Persistence) as well as dimensions assessing military-specific temperament traits (Physical Conditioning, Courage, Team Orientation, Adventure Seeking, Situational Awareness, and Commitment to Serve) were developed. In total, the TAPAS can currently assess up to 32 personality facets. These facets are described in Table 1 and this taxonomy makes the TAPAS among the most comprehensive measures of personality currently available. As such, the TAPAS is flexible enough that it can be used to predict a large number of performance criteria in a broad range of MOS.

Finally, the TAPAS can also be administered in a computer-adaptive testing format. This format is more resistant to cheating in that each test-taker will see a slightly different set of items, making it more difficult for individuals or groups of people to share test content (Drasgow et al., 2009). In addition, past research has shown that computer-adaptive testing can reduce the number of items required for an assessment. Stark et al. (2012) found that an adaptive test could be up to 50% shorter than a static assessment while still maintaining the same degree of measurement precision. Therefore, adaptive testing provides several advantages for personnel selection settings.

Table 1. TAPAS Facets

TAPAS Facet Name	Brief Description	"Big Five" Broad Factor
Attention Seeking	High scoring individuals tend to engage in behaviors that attract social attention; they are loud, loquacious, entertaining, and even boastful.	Extraversion
Dominance	High scoring individuals are domineering, "take charge" and are often referred to by their peers as "natural leaders."	
Sociability	High scoring individuals are friendly and tend to seek out social interactions.	
Consideration	High scoring individuals are affectionate, compassionate, sensitive, and caring.	Agreeableness
Cooperation	High scoring individuals are trusting, cordial, non-critical, and easy to get along with.	
Selflessness	High scoring individuals are generous with their time and resources.	
Humility	High scoring individuals tend to be honest, to put others' needs before their own, and do not focus on being the center of attention.	
Achievement	High scoring individuals are seen as hard working, ambitious, confident, and resourceful.	Conscientiousness
Order	High scoring individuals tend to organize tasks and activities and desire to maintain neat and clean surroundings.	
Non-Delinquency	High scoring individuals tend to comply with rules, customs, norms, and expectations, and they tend not to challenge authority.	
Responsibility	High scoring individuals are dependable, reliable, and make every effort to keep their promises.	
Self-Control	High scoring individuals tend to be cautious, levelheaded, able to delay gratification, and patient.	
Persistence	High scoring individuals tend to focus on tasks and activities until they are completed and are determined to accomplish their goals even in the face of obstacles.	
Virtue	High scoring individuals adhere to standards of honesty, morality, and "good Samaritan" behavior.	
Adjustment	High scoring individuals are worry free and handle stress well; low scoring individuals are generally high strung, self-conscious, and apprehensive.	Emotional Stability
Even Tempered	High scoring individuals tend to be calm and stable; they do not often exhibit anger, hostility, or aggression.	
Optimism	High scoring individuals have a positive outlook on life and tend to experience joy and a sense of well-being.	

Aesthetics	High scoring individuals appreciate various forms of art and music and participate in art-related activities more than most people.	Openness To Experience
Curiosity	High scoring individuals are inquisitive and perceptive; they are interested in learning new information and attend courses and workshops whenever they can.	
Depth	High scoring individuals tend to examine their lives and exhibit behaviors associated with self-improvement.	
Intellectual Efficiency	High scoring individuals are able to process information quickly and would be described by others as knowledgeable, astute, and intellectual.	
Ingenuity	High scoring individuals are inventive and can think "outside of the box."	
Tolerance	High scoring individuals are interested in other cultures and opinions that may differ from their own; they are willing to adapt to novel environments and situations.	
Adventure Seeking	High scoring individuals enjoy participating in extreme sports and outdoor activities.	TAPAS Specific Facets
Commitment to Serve	High scoring individuals are more affectively committed to serving in the U.S. Military.	
Courage	High scoring individuals stand up to challenges and are not afraid to face dangerous situations.	
Physical Conditioning	High scoring individuals tend to engage in activities to maintain their physical fitness and are more likely to participate in vigorous sports or exercise.	
Situational Awareness	High scoring individuals pay attention to their surroundings and rarely get lost or surprised.	
Team Orientation	High scoring individuals prefer working in teams and help people work together better.	
Machiavellianism	High scoring individuals generally try to deceive and manipulate others for personal gain.	
Army Self-Efficacy	High scoring individuals are confident in their abilities to successfully perform the tasks of a Soldier and accomplish their goals in the Army.	
Self-Efficacy	High scoring individuals are confident in their skills and abilities to accomplish any task that they take on.	

TAPAS Composites

A key factor in the validity of the TAPAS has been the use of composites of TAPAS scales. These composites have several advantages for predicting performance both Army-wide and in a particular MOS. Specifically, the TAPAS composites are important because Army jobs (as with many civilian jobs) are complex and require a broad range of individual characteristics to perform well. Therefore, we would not expect a single narrow TAPAS facet to predict all aspects of performance in each MOS. Instead, composites of the TAPAS facets will assess a broader range of individual characteristics that might be relevant to performance outcomes. In other words, although we may find only moderate correlations between individual TAPAS facets and performance, we expect combinations of facets to predict performance well. This expectation is consistent with recent research demonstrating that composites of personality scales are better predictors of work outcomes than individual scales (Judge et al., 2013; Nye et al., 2020).

Given the benefits of personality composites, the TAPAS provides a unique advantage for predicting performance outcomes, because it can be used to assess a broad range of personality characteristics and these dimensions can be combined in several different ways to form composites for predicting military outcomes. Consequently, several TAPAS composites have been developed and used to predict performance outcomes. As part of the U.S. Army's Expanded Enlistment Eligibility Metrics (EEEM) project, an initial performance screen was developed from the TAPAS scales for the purpose of testing in an applicant setting (Allen et al., 2010). This was accomplished by (a) identifying key criteria of interest to the Army, (b) categorizing these criteria into "Can-Do" and "Will-Do" performance, and (c) selecting composite scales corresponding to the Can-Do and Will-Do criteria, taking into account both theoretical rationale and empirical results. The result of this process was two composite scores.

1. **TAPAS Can-Do composite:** The TAPAS Can-Do composite was designed to predict Can-Do criteria such as MOS-specific job knowledge, Advanced Individual Training (AIT) course grades, and graduation from AIT/One Station Unit Training (OSUT).
2. **TAPAS Will-Do composite:** The TAPAS Will-Do composite was designed to predict Will-Do criteria such as physical fitness test scores, adjustment to Army life, effort, and support for peers.

Initial validity results suggested that cut scores based on these two composites were promising for selecting high performing Soldiers.

More recently, these composites were updated and expanded to improve prediction. First, the scales comprising the TAPAS composites have been updated using larger samples of TAPAS and criterion scores. These larger sample sizes provide more accurate and consistent estimates of the composite weights (Nye et al., 2012). Second, given the substantial cost of attrition for the military, an Attrition composite was added to the Can-Do and Will-Do composites to predict 6-month attrition from the Army (Nye et al., 2012). Subsequent research examining MOS-specific composites later expanded this work to focus on predicting 12-month attrition and reverse-scored this outcome so that all of the TAPAS composites would be scaled in the positive direction (Nye et al., 2020). This reverse-scored TAPAS 12-month attrition composite was labeled Adaptation.

Finally, a fourth TAPAS composite is now reported at the MEPS to predict misconduct attrition. Again, given the cost of attrition, the Army is particularly interested in predicting this outcome. In addition, analyses indicated that the predictors of attrition varied by the reason for leaving. In other words, different TAPAS facets predicted attrition due to misconduct and attrition for other reasons. Therefore, examining the different types of attrition helped to improve the prediction of these outcomes. As with the Adaptation composite, the TAPAS composite for predicting misconduct attrition is reverse-scored (i.e., to scale all of the composites in the same direction) and labeled the Conduct composite. Given this previous research, we also examined TAPAS Can-Do, Will-Do, Adaptation, and Conduct composites in the current effort.

TAPAS Predictive Validity

Given the advantages of the TAPAS, a growing body of research has demonstrated the utility of this assessment for predicting important military outcomes and identifying high potential Soldiers who are likely to be successful in the Army. In 2006, the Army Research Institute for the Behavioral and Social Sciences (ARI) initiated the Validating Future Force Performance Measures (Army Class) research program to explore the use of several experimental non-cognitive measures for selection and MOS classification. Results showed that the TAPAS provided significant incremental validity over the Armed Forces Qualification Test (AFQT) for predicting attrition, end of training criteria, and in-unit performance (Knapp & Heffner, 2009; Knapp, Owens, & Allen, 2011). In addition, this research found that the TAPAS provided non-trivial gains in classification efficiency over the ASVAB alone.

Additional predictive validity evidence for the TAPAS was collected during the EEEM research project from 2007-2009 (Knapp & Heffner, 2010). Again, the TAPAS dimensions showed incremental validity over the AFQT for predicting several performance criteria. For example, when the TAPAS trait scores were added into a regression analysis based on a sample of several hundred Soldiers, the multiple correlation increased by .26 for the prediction of physical fitness, by .16 for the prediction of disciplinary incidents, and by .20 for the prediction of 6-month attrition (Allen et al., 2010). None of these criteria were predicted well by the AFQT alone (predictive validity estimates were consistently below .10).

Based on these early results, the U.S. Army approved the initial operational testing and evaluation (IOT&E) of the TAPAS for use with Army applicants at Military Entrance Processing Stations (MEPS). Since the IOT&E began in May of 2009, the TAPAS has been administered to over two million applicants to the U.S. Military. Again, the TAPAS has shown validity for predicting a broad range of military outcomes under operational conditions (Knapp & Kirkendall, 2020). In addition, research has also demonstrated that the TAPAS can predict Soldiers' attitudes and performance within MOS as well (Nye et al., 2012). For example, Nye et al. (2012) developed MOS-specific composites of TAPAS scales for predicting performance and attrition outcomes in MOS 11B (Infantry), 31B (Military Police), 68W (Combat Medics), and 88M (Motor Vehicle Operators). They found adjusted multiple correlations ranging from .18 to .35 for predicting Can-Do criteria (a combination of job knowledge tests) and from .24 to .36 for predicting Will-Do criteria (a combination of behaviors driven by motivation) across MOS. Results also showed a relationship between the TAPAS scales and 6-month attrition. For example, in MOS 11B, which was the largest MOS in the sample, results showed that Soldiers with the highest scores on an MOS-specific TAPAS attrition composite were 78% less likely to leave the Army during their first 6-months of service than those with the lowest scores. In addition, the highest scoring group also scored higher on the Army Physical Fitness Test (APFT), the MOS-specific job knowledge test, and engaged in fewer disciplinary incidents. Similar results were obtained for the other MOS examined in that research. Moreover, subsequent research expanded these results to an additional MOS (Wheeled Vehicle Mechanics: 91B) and demonstrated that these MOS-specific composites added incremental validity over the ASVAB Aptitude Area (AA) composites for each MOS (Nye et al., 2020). These results indicate that the TAPAS is useful for predicting performance across various military specialties.

Subsequent research has provided additional evidence for the validity of the TAPAS in other special-duty assignments (e.g., Horgen et al., 2013). In one study, researchers examined whether the TAPAS could predict selection for Army Special Operations Forces (ARSOF) training following the assessment and selection course (Nye et al., 2014). Examining a large sample of ARSOF candidates, this research found that 61% of individuals scoring in the highest quintile on an ARSOF-specific composite of TAPAS scales were selected for ARSOF training compared to only 35% of individuals in the lowest scoring group. These results suggest that the TAPAS may have important practical implications for selecting and classifying Soldiers into combat positions.

Purpose of the Current Research

Given the growing literature on the validity of the TAPAS, the primary objective of this effort was to update and expand previous research on the effectiveness of the TAPAS as a tool for MOS qualification. Specifically, the goal of the present research was to examine the validity of MOS-specific TAPAS composites for identifying high potential Soldiers in close combat occupations including Infantry (11B), Cavalry Scouts (19D), and M1 Armor Crewman (19K). As noted above, previous research has demonstrated that the TAPAS can contribute to the MOS classification process (Nye et al., 2012, 2020). This research showed that many Soldiers were predicted by the TAPAS to perform better in a different MOS than the one they were in at the time of the research. However, this previous research only included a single close combat MOS (Infantry, 11B) and did not examine Cavalry Scouts (19D) or M1 Armor Crewman (19K). Therefore, the research described in this report examines a combination of both TAPAS and ASVAB scores for predicting relevant outcomes in each of these MOS. In addition, we also examined whether the TAPAS could be used to differentiate Soldiers who might perform better in one of these close combat MOS than in the others. This form of differential validity is important for the classification process and for identifying high potential Soldiers for Infantry (11B), Cavalry Scouts (19D), and M1 Armor Crewman (19K).

EXAMINE TAPAS IMPLEMENTATION OPTIONS FOR CLASSIFICATION INTO CLOSE COMBAT JOBS

To examine the combined validity of the TAPAS and ASVAB for predicting performance in Infantry (11B), Cavalry Scouts (19D), and Armor (19K) MOS, we first examined the validity of the TAPAS for predicting both end of training (EOT) and in-unit criteria in each of these MOS. Next, we examined the incremental validity of the TAPAS over the ASVAB for predicting these same outcomes. We also examined the use of the TAPAS scales to identify high potential individuals who get low scores on the ASVAB AA composite but are predicted to perform well based on their TAPAS scores. Finally, we explore the potential benefits of using TAPAS scores for MOS classification.

METHOD

Sample

The data for this research effort included TAPAS and criterion data collected through September 2020 in the Validation of Accession Screening Tools (VAST) program of research. The data consisted of a total of 2,662,409 respondents. Of those with the corresponding demographic data, approximately 77% of the individuals in this sample (n = 1,243,329) were male and 71% (n = 1,501,379) were Caucasian. In addition, 54% (n = 1,447,128) of the sample were Regular Army, 25% (n = 656,094) were Army National Guard, and 13% (n = 343,958) were in the Army Reserve (8% did not report their component). From this sample, we examined relationships among the TAPAS, ASVAB, and various criteria in the three focal MOS: Infantry (11B), Cavalry Scouts (19D), and M1 Armor Crewman (19K).

The largest MOS was Infantry (11B) with a total sample size of 225,311. However, after removing invalid responders (i.e., those that did not answer at least 80% of the items) and individuals identified as potentially unmotivated (e.g., responded too quickly or selected the same response option too many times), a sample of 94,641 individuals had valid TAPAS scores. Of those that had corresponding demographic data, 99.5% were male, and 84% (n = 79,040) were Caucasian. In addition, 67% (n = 63,184) of the sample were Regular Army, 32% (n = 29,950) were Army National Guard, and 2% (n = 1,505) were Army Reserve.

The total sample size for MOS 19D (Cavalry Scouts) was 45,777. After removing invalid and unmotivated responders, a sample of 21,303 individuals had valid TAPAS scores. Of those with corresponding demographic data, 99% (n = 20,610) were male, and 83% (n = 17,446) were Caucasian. In addition, 76% (n = 16,136) of the sample were Regular Army, 23% (n = 4,938) were Army National Guard, and 1% (n = 227) were Army Reserve.

The total sample size for MOS 19K (M1 Armor Crewman) was 23,708. After removing invalid and unmotivated responders, a sample of 9,747 individuals had valid TAPAS scores. Of those with corresponding demographic data, 97% (n = 9,219) were male, and 79% (n = 7,633) were Caucasian. In addition, 84% (n = 8,178) of the sample were Regular Army, 15% (n = 1,456) were Army National Guard, and 1% (n = 113) were Army Reserve.

Predictor Measures

Tailored Adaptive Personality Assessment System (TAPAS). The versions of TAPAS that were used for this research were administered at the MEPS. As described above, the TAPAS can assess up to 32 different personality facets. However, only a subset of these dimensions can be assessed in any one TAPAS version due to concerns about testing time and test-taker fatigue. Therefore, one difficulty with analyzing the TAPAS data is that the different versions administered at the MEPS assessed different facets. The purpose of administering different versions was to collect data on several new TAPAS scales and to determine the validity of these scales while still administering the facets that were being used operationally. As such, each TAPAS form included a core subset of scales and several additional scales that varied by form. Although this approach provided data on promising new scales, it also presented problems for data analyses. Specifically, the design of these forms resulted in missing data for some of the facets.

The missing TAPAS facet scores on each form created a problem for the current research because a full correlation matrix between all of the TAPAS facets is required for regression analyses. Although previous research has used a meta-analytic approach (Nye et al., 2020), this was not possible in the present study because the goal was to examine the actual performance of individuals based on their MOS-specific TAPAS profiles. Therefore, each individual needed to have scores on all relevant TAPAS facets. To address this issue, we identified the subset of TAPAS facets with the largest number of responses in the VAST data file. This resulted in a subset of 11 TAPAS facets that could be used for these analyses, including Achievement, Dominance, Even Tempered, Intellectual Efficiency, Non-Delinquency, Optimism, Order, Physical Conditioning, Selflessness, Sociability, and Tolerance.

For comparison with the MOS-specific results presented next, Table 2 shows Army-wide descriptive statistics for the TAPAS facets administered at the MEPS. Prior to running all analyses, the TAPAS data were screened for unmotivated responders. Respondents were flagged as potentially unmotivated if their observed response patterns contained an unusually low/high number of Statement 1 selections, an unusually large number of patterned responses (e.g., ABABAB…), or their item/test response latencies were unusually fast (e.g., responding to items in less than 1 or 2 seconds).

In Table 2, the normed means and standard deviations for the TAPAS scales are presented. To facilitate the comparability of scores across the TAPAS versions, raw dimension scores were normed and transformed into percentile scores. Then, the percentile scores were transformed into standardized scores within each version, so a score of + 1.0 meant that an examinee was 1.0 SD above the mean with respect to the norm group. As can be seen in Table 2, the majority of TAPAS standardized dimension scores had means near zero and standard deviations around one. The normed scores ranged from -2.33 to 2.33. Minor deviations from the expected mean of zero in the total sample were due to slight differences between the Army-wide sample and the norm groups. Each version of the TAPAS used a different norm sample, which was composed of a large sample (ranging from 34,424 to 60,485) of Army examinees who completed the TAPAS version during its initial administration at the MEPS. The various forms of TAPAS were not administered an equal number of times at the MEPS so the sample sizes presented in Table 2 vary substantially by scale.

Table 2. Descriptive Statistics for the TAPAS Facets in the Total Sample

TAPAS Facets	N	Normed[a] Mean	Normed[a] Standard Deviations
Achievement	1,522,019	-.03	.98
Dominance	1,456,662	-.06	.97
Even Tempered	1,456,662	.01	.99
Intellectual Efficiency	1,456,662	.00	.96
Non-Delinquency	895,046	.03	.98
Optimism	1,456,662	-.02	.98
Order	1,350,614	.02	.97
Physical Conditioning	1,456,662	-.01	.99
Selflessness	1,350,614	.03	.98
Sociability	1,350,652	-.03	.99
Tolerance	1,416,009	.08	.98

[a] Scores were standardized based on norming samples of approximately 34,000 to 60,000 (depending on the TAPAS version) Army examinees who completed the TAPAS at the MEPS.

Armed Services Vocational Aptitude Battery (ASVAB). Because of its role in the current selection and classification systems, we used ASVAB scores as the baseline for comparing the predictive validity of the TAPAS scales in each MOS. The ASVAB contains 9 subtests that assess multiple aptitudes, which are combined to create composites and used as the basis for current selection and classification decisions. For example, the AFQT, which is a composite of the Word Knowledge, Paragraph Comprehension, Arithmetic Reasoning, and Math Knowledge subtests of the ASVAB, is used for enlistment screening. For MOS classification, the ASVAB subtests are used to form nine AA composites that correspond to the various MOS. The Combat (CO) AA composite is used for all three MOS examined here (i.e., Infantry [11B], Cavalry Scouts [19D], and M1 Armor Crewman [19K]). Applicants must receive a minimum score on this composite to qualify for one of these MOS.

Criterion Measures

Several criterion measures were available for evaluation of the criterion-related validity of the TAPAS. These measures were collected as part of the VAST program and included both EOT and in-unit criteria. First, the EOT criteria included Army-Wide and MOS-Specific Job Knowledge Tests (JKT), the Army Life Questionnaire (ALQ), APFT scores, Training Achievement (AIT/OSUT Schoolhouse Grades), Training Failure (AIT/OSUT Graduation), Disciplinary Incidents, and Attrition.

Job Knowledge Tests (JKTs). The Army-Wide and MOS-Specific JKTs were originally developed for the Future Force Performance Measures (Army Class) project (Knapp & Heffner, 2009). The Army-Wide JKT assessed general aspects of Soldier performance applicable across all Army MOS. The MOS-specific JKTs assessed knowledge of basic facts, principles, and procedures required of Soldiers during training using a variety of item formats including multiple choice and rank-order. The MOS-specific JKTs utilized in this effort were for Infantry (11B), Cavalry Scouts (19D), and M1 Armor Crewman (19K). For the current analyses, we used the total score across all MOS-specific JKT items for that MOS.

Army Life Questionnaire (ALQ). The next measure included was the ALQ, which assesses Soldiers' self-reported attitudes and experiences in the Army. For the current effort, the focus was on seven dimensions: Affective Commitment, Normative Commitment, Army Career Intentions, Reenlistment Intentions, Attrition Cognition, Army Life Adjustment, and Army Needs-Supply Fit. Each of these dimensions is measured with four- to nine-item scales. Additionally, the ALQ also asked Soldiers for their most recent APFT scores. The APFT is a measure of physical fitness as indexed by the ability to perform certain numbers of push-ups and sit-ups, and time taken to complete a two-mile run, adjusted for age. Finally, the ALQ data also included self-reported Disciplinary Incidents. For these, scores were computed by summing the "yes" responses to a list of possible incidents.

Administrative Criteria. Soldier attrition was also available in the dataset. Attrition generally includes voluntary and involuntary separations from the Army for a variety of reasons as designated by the Soldier's Separation Program Designator code. Two measures of attrition were examined for the current research. First, we used a general indicator of attrition (1 = Attrit, 0 = Did Not Attrit) that reflected whether the Soldier had separated within 12 months of the start of his or her Army career. In the current project, this general attrition variable was reverse-coded to focus on Adaptation (attrition recoded as 1 = Did Not Attrit, 0 = Attrit), rather than attrition. The second indicator of attrition reflected whether the Soldier had separated from the Army due to misconduct. The goal of examining misconduct attrition separately was to determine whether a different set of TAPAS facets would predict this outcome when compared with the predictors of general attrition. For these analyses, misconduct attrition was also reverse-coded to focus on Conduct (misconduct attrition recoded as 1 = did not attrit due to misconduct, 0 = left the Army due to misconduct).

The next two administrative criteria were also related to training and were obtained from the Army Training Requirements and Resources System (ATTRS) and Resident Individual Training Management System (RITMS). The first of these was whether the Soldier had graduated from AIT/OSUT. This variable, Training Failure, was scored dichotomously (0 = Graduate, 1 = Failure). The second training variable taken from training records reflected Training Achievement and included AIT/OSUT School Grades.

In-Unit Criteria. In addition to the EOT criteria, we also examined the prediction of several in-unit criteria. The purpose of these analyses was to explore any differences in the prediction of EOT and in-unit criteria. These criteria were assessed using an alternative version of the ALQ that was specifically designed for in-unit administration. This version of the ALQ assesses Soldiers' self-reported attitudes and experiences in their unit rather than in training. For the analyses of in-unit criteria, we examined 12 dimensions: Affective Commitment, MOS Fit, Career Intentions, Reenlistment Intentions, Resilience, Organizational Citizenship Behavior, Counterproductive Soldier Behavior, Social-Normative Motivation to Lead, Affective Motivation to Lead, Noncalculative Motivation to Lead, Deployment Satisfaction, and self-reported Objective Performance. As with the EOT version of the ALQ, Soldiers were also asked about their most recent APFT scores and self-reported Disciplinary Incidents. Again, Disciplinary Incidents were computed by summing the "yes" responses to a list of possible incidents.

Criterion Composites. Given the large number of criteria measured both at the end of training and in-unit, we created the same Can-Do, Will-Do, and Adaptation Criteria that had been used in earlier TAPAS classification work (Nye et al., 2012; Nye et al., 2020). In addition, as noted above, we also examined misconduct attrition as a separate outcome due to the potential differences in the predictors of this form of attrition when compared with other forms of attrition. The goal of examining these four criteria was to create a small number of variables that could be used as outcomes for developing MOS-specific TAPAS composites.

The history and development of the four criteria examined in this research are described in more detail in the Introduction. Again, the Can-Do criterion composite was comprised of scores on the Army-wide and MOS-specific JKTs. The Will-Do criterion consisted of the ALQ scales (e.g., adjustment, commitment, reenlistment intentions), APFT scores, training achievement, training failure, and disciplinary incidents. Given their importance to the Army, APFT scores and disciplinary incidents were double-weighted whereas the other components of this criterion composite were unit-weighted. To create the Can-Do and Will-Do criterion composites, scores for each criterion measure were first standardized to account for differences in their standard deviations and then summed to create overall scores for each composite. Finally, both misconduct attrition and 12-month attrition were reverse-coded (1 = Did Not Attrit, 0 = Attrit) and labeled Conduct and Adaptation, respectively, to put them on the same metric as the Can-Do and Will-Do composites. Thus, our analyses focused on two criterion composites (i.e., Can-Do and Will-Do) and two attrition outcomes (i.e., Adaptation and Conduct).

Importantly, only the Will-Do criterion composite was examined in-unit. The Can-Do criterion could not be calculated because Army-wide job knowledge was not assessed in-unit. In addition, the attrition data were obtained from administrative records and did not differentiate between EOT and in-unit attrition. Therefore, we only examined the will-do criteria for the in-unit analyses. Due to the limited number of outcomes available in-unit, we examined the prediction of each outcome separately as well as combined into an overall Will-Do composite. This composite included all the ALQ scales described above for the in-unit assessment.

Overview of Analyses

Three sets of analyses were conducted to evaluate TAPAS as an MOS qualification and classification tool for Infantry (11B), Cavalry Scouts (19D), and M1 Armor Crewman (19K). For the first set of analyses, we used regression analysis to identify the validity of the TAPAS facets for predicting the EOT criteria. To do so, we regressed the Can-Do, Will-Do, Adaptation, and Conduct criteria onto the TAPAS facet scores and estimated the regression weights for each facet. For these analyses, ordinary least squares (OLS) regression was used for predicting the Can-Do and Will-Do criteria. However, because both Adaptation and Conduct were represented by dichotomous variables, we used logistic regression to predict these outcomes. Based on these analyses, we used the empirically derived weights for all the facets to create TAPAS composites for each of the MOS under investigation. Although previous research has generally used these analyses to identify a reduced number of TAPAS facets for creating a composite (e.g., Nye et al., 2012), we used all of the TAPAS facets examined in our analyses due to the small sample sizes in Cavalry Scouts (19D) and Armor Crewman (19K) when the TAPAS scores and criteria were combined. These small sample sizes would have resulted in greater sampling error and less power to detect statistically significant regression weights. In other words, there was a greater possibility of capitalizing on chance. Therefore, rather than excluding potentially useful facets, we used all the facets for these analyses. Then, we computed predicted scores for each of the four criteria using all of the TAPAS facets and the regression weights estimated in each MOS.

In addition to examining the validity of the TAPAS facets for predicting the four focal criteria, a second set of analyses was conducted to determine the incremental validity of the TAPAS over the ASVAB AA composites for each MOS. In addition to examining incremental validity, a second goal of these analyses was to determine the combined validity of these two screening measures. These analyses were conducted to explore potential uses of the TAPAS in combination with the ASVAB, which has been used for MOS qualification for several decades. After examining the prediction of EOT criteria, we also explored the prediction of the in-unit Will-Do criteria. For these analyses, we examined both the validity of the TAPAS facets and their incremental validity over the ASVAB AA composite.

For the final set of analyses, we examined whether using TAPAS could improve the classification of Soldiers into the three focal MOS. From our validity analyses, we obtained standardized regression equations for predicting the criterion variables in each MOS from the composites of TAPAS scales. Using these equations, we computed scores on the Can-Do, Will-Do, Adaptation, and Conduct criteria for each Soldier in each MOS. Individuals were then (hypothetically) assigned to the MOS for which they had the highest potential for performance and satisfaction. Finally, we evaluated whether using TAPAS in this way could improve performance potential across MOS. Although this approach provides an overly simplified view of the classification process (i.e., it does not consider factors like Soldier preference, MOS needs, or training availability), these analyses illustrate the potential gains in performance that can be obtained by using the TAPAS.

TAPAS VALIDITY: INFANTRY (MOS 11B)

Predicting EOT and Attrition Criteria

Table 3 shows the descriptive statistics for the TAPAS facets and the criterion composites in the sample of Infantry (11B). Again, the raw dimension scores were normed and transformed into standardized scores within each version, so a score of + 1.0 meant that an examinee was 1.0 SD above the mean with respect to the norm group. In other words, departures from the mean of zero indicate differences between this group and the Army-wide samples of applicants used for norming. As such, Table 3 suggests that the Infantry Soldiers in this sample had higher mean scores on Physical Conditioning and slightly lower mean scores on Selflessness and Order relative to the norming sample of Army applicants. Table 4 shows the correlations between the TAPAS facets and the four criterion composites.

Table 3. Descriptive Statistics for the TAPAS Facet Scales and the Criteria in MOS 11B

TAPAS Facets	Sample Size	Normed[a] Mean	Normed[a] Standard Deviation
Achievement	94,641	.04	.99
Dominance	94,577	.03	1.00
Even Tempered	94,577	.00	1.00
Intellectual Efficiency	94,577	-.04	.95
Non-Delinquency	54,794	-.03	.99
Optimism	94,577	.04	.98
Order	87,207	-.16	.94
Physical Conditioning	94,577	.27	.99
Selflessness	87,207	-.11	.97
Sociability	86,874	-.02	1.00
Tolerance	86,938	-.06	.98
Criteria			
Can-Do Criterion[b]	39,721	-.05	.40
Will-Do Criterion[b]	39,721	.08	1.82
12-Month Attrition[b]	27,715	.14	.04
Misconduct Attrition[b]	27,715	.31	.06

[a] TAPAS scores were standardized based on norming samples of approximately 34,000 to 60,000 (depending on the TAPAS version) Army examinees who completed the TAPAS at the MEPS.
[b] The criteria were not normed and, therefore, only the raw scores are reported.

Table 4. Correlations between the TAPAS Facets and the Criteria in Infantry

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. Achievement	1.00															
2. Dominance	.33	1.00														
3. Even Tempered	.13	-.02	1.00													
4. Intellectual Eff.	.30	.30	.11	1.00												
5. Non-Delinquency	.19	-.02	.25	.04	1.00											
6. Optimism	.17	.12	.21	.12	.12	1.00										
7. Order	.20	.08	.06	.11	.13	.03	1.00									
8. Physical Cond.	.26	.22	-.08	.11	-.04	.06	.09	1.00								
9. Selflessness	.17	.07	.17	.06	.18	.10	.09	.01	1.00							
10. Sociability	.12	.24	.07	.10	.02	.16	.04	.03	.18	1.00						
11. Tolerance	.11	.05	.19	.14	.07	.10	.05	-.03	.27	.21	1.00					
12. Can-Do Criterion	.04	.04	.04	.17	-.03	.03	-.08	.03	-.02	-.11	.00	1.00				
13. Will-Do Criterion	.17	.17	.01	.09	.03	.07	.02	.17	.04	.05	.03	.15	1.00			
14. 12-Month Attrition	-.03	-.05	.01	.00	.02	-.03	.01	-.09	.00	.00	.02	-.04	-.10	1.00		
15. Misconduct Attrition	.00	.02	.00	.03	-.03	.00	.01	-.01	-.03	.05	.00	-.10	-.02	.48	1.00	
16. ASVAB CO AA	.09	.14	.06	.29	-.06	.08	-.13	.09	-.07	-.12	-.03	.46	.07	-.08	-.09	1.00

Note: All correlations greater than .01 are statistically significant, *p* < .05. Sample sizes for these correlations ranged from 6,991 to 94,577. ASVAB CO AA = Armed Services Vocational Aptitude Battery Combat Aptitude Area Composite.

The standardized regression weights for the TAPAS facets predicting the Can-Do, Will-Do, Adaptation, and Conduct criteria in MOS 11B are shown in Table 5. The multiple *R*s for the four criteria ranged from .15 to .26. Although the adjusted (for capitalization on chance) *R*s could only be calculated for Can-Do and Will-Do, these values were .24 and .26. These results indicate that the TAPAS facets were moderate predictors of several criteria in the Infantry.

Because personality is an antecedent for motivation to perform well on the job (Judge & Ilies, 2002; White et al., 2001), the TAPAS facets were expected to be particularly strong predictors of Will-Do criteria. As shown in Table 5, this was the case in MOS 11B. The multiple *R* for the Will-Do composite was .26 and was larger than for the other criterion composites, though not substantially larger than for the Can-Do criterion. The TAPAS Physical Conditioning facet was the best predictor of the Will-Do criterion. Physical Conditioning was also the strongest predictor of Adaptation, with high scores on this scale leading to a greater probability of completing the first year of enlistment. The TAPAS Intellectual Efficiency scale emerged as the best predictor of the Can-Do criterion. This was expected given the cognitive content of the Intellectual Efficiency facet. Finally, Sociability was the strongest predictor of the Conduct criterion, but in the negative direction. This suggests that Soldiers who scored high on Sociability were more likely to leave the Army due to misconduct.

Table 5. Regression Weights for the TAPAS Facets in each Composite for Infantry (MOS 11B)

TAPAS Facets	Criteria			
	Can-Do	Will-Do	Adaptation[a]	Conduct[a]
Achievement	.01	**.12**	.02	**.09**
Dominance	.01	**.10**	**.09**	**-.07**
Even Tempered	**.03**	-.01	.02	-.02
Intellectual Efficiency	**.18**	.01	**-.05**	**-.09**
Non-delinquency	**-.03**	-.01	**-.05**	.03
Optimism	**.03**	**.04**	**.07**	-.02
Order	**-.10**	-.01	**-.08**	**-.09**
Physical Conditioning	**.03**	**.14**	**.35**	.03
Selflessness	.00	.01	**-.09**	-.03
Sociability	**-.12**	.00	-.01	**-.21**
Tolerance	**-.03**	.01	-.03	**.11**
Multiple R	.24	.26	.19	.15
Adjusted Multiple R	.24	.26	--	--

Note: Samples sizes: Can-Do n = 8,469; Will-Do n = 8,814; Adaptation n = 20,489; Conduct n = 23,394. To be consistent with the results for other MOS, all TAPAS scales were included in each composite. Bold values indicate significant regression weights.

[a] The regression weights for the Can-Do and Will-Do criteria are the standardized regression weights. However, due to the dichotomous nature of the attrition outcomes, these analyses were conducted using logistic regression. Therefore, the results presented for these outcomes are the unstandardized regression weights.

Table 6 shows the significant correlations between the four TAPAS composites for Infantry and various outcomes in that specialty. Overall, the TAPAS composites for the Will-Do and Adaptation criteria showed the largest number of significant correlations across all outcomes. However, the TAPAS Can-Do composite was also significantly correlated with measures of job knowledge. For comparison, significant correlations between the ASVAB CO AA composite, the TAPAS composites, and the criteria are also included. As expected, the ASVAB CO composite was most highly correlated with the TAPAS Can-Do composite and Can-Do criteria.

Table 6. Significant Correlations between the Criterion Measures and the TAPAS Composites in Infantry (MOS 11B)

	Infantry TAPAS Composites				
Criteria	**TAPAS Can-Do Composite**	**TAPAS Will-Do Composite**	**TAPAS Adaptation Composite**	**TAPAS Conduct Composite**	**ASVAB CO AA Composite**
ASVAB CO AA Composite	.41	.13	.11	.03	--
Can-Do Criterion Composite	.25	.05	.03	.06	.46
MOS-Specific Job Knowledge Test	.24	.06	.04	.06	.42
Army-Wide Job Knowledge Test	.21	.03		.05	.41
Will-Do Criterion Composite	.06	.27	.19	-.04	.06
APFT Scores	.08	.29	.30		.09
Affective Commitment		.12		-.05	-.02
Normative Commitment	.07	.10	.04		.10
Army Career Intentions		.06			-.07
Army Reenlistment Intentions		.08			-.03
Attrition Cognitions	-.06	-.14	-.08	.03	-.07
Army Life Adjustment	.08	.24	.18	-.07	.09
Needs-Supply Fit	.04	.16	.07	-.04	.02
Training Achievement	-.05	.13	.11	-.05	-.11
Training Failure	-.05	-.15	-.15	.05	-.09
Disciplinary Incidents	-.03	-.09	-.07		-.05
12-Month Attrition[a]	-.03	-.09	-.12		-.09
Misconduct Attrition[a]	-.03			-.13	-.10

Note: Sample sizes for these correlations ranged from 6,183 to 126,929. [a] Correlations with both 12-month and misconduct attrition are Pearson correlations. Due to the dichotomous attrition variables, these correlations were expected to be lower than the multiple *R*s in Table 6, which were based on logistic regression analyses.

Figure 1 illustrates the practical importance of these relationships. This figure shows quintile plots predicting the Can-Do, Will-Do, Adaptation, and Conduct criteria as examples of the relationships between the criteria and the TAPAS composites developed here. On the X-axes of these plots are the quintiles for the predicted scores from the four TAPAS composites illustrated in Table 5. The criteria are represented on the Y-axes. To make these plots more interpretable, the Can-Do and Will-Do criteria were rescaled to have a mean = 100, SD = 20. Because 12-month attrition and misconduct attrition are dichotomous variables, the Y-axes for these graphs represent the percentage of individuals in each quintile that left the Army either within 12 months or due to misconduct, respectively. Note that both forms of attrition are negatively related to the TAPAS Adaptation and Conduct composites because these composites are rescaled to be in the same direction as the Can-Do and Will-Do composites. Therefore, lower scores on these composites (i.e., the bottom quintiles) should lead to higher percentages of 12-

month and misconduct attrition. The Y-axes for the Can-Do and Will-Do criteria are scaled to range from +/- 1 standard deviation from the mean of the criterion.

As shown in Figure 1, the TAPAS was useful for identifying high scorers on the Can-Do and Will-Do criteria in Infantry. Soldiers scoring in the bottom 20% on the TAPAS Will-Do composite had average scores on the corresponding criterion that were 14 points lower than for individuals scoring in the highest 20%. Similarly, individuals with scores in the lowest quintile on the TAPAS Can-Do composite scored 23 points lower (i.e., more than a full standard deviation) on the Can-Do criterion than individuals in the top quintile. In addition, 21% of individuals scoring in the lowest quintile on the TAPAS Adaptation composite separated from the Army during their first 12 months of service while only 8% of those in the highest quintile ended their service during this time frame. Finally, only 23% of the highest scorers on the TAPAS Conduct composite left the Army due to misconduct compared with 41% of individuals in the bottom 20% on this composite. These results suggest that the apparently modest correlations illustrated in Table 6 can have substantial practical importance when used for MOS qualification and assignment. This was particularly evident for 12-month and misconduct attrition where the correlations were generally small, but the attrition rates were substantially different between the highest and lowest scoring groups on the Adaptation and Conduct composites, respectively.

We also examined the incremental validity of the TAPAS facets for predicting these same criteria over the AA composite used for qualification into Infantry (11B). Because aptitude tests like the ASVAB and the AA composites created from its subscales have been shown to be strong predictors of job knowledge (Hunter & Hunter, 1984; Campbell & Knapp, 2001), we expected the TAPAS to provide little incremental validity when predicting the Can-Do criterion. However, given the relationship between personality and performance motivation (Judge & Ilies, 2002), we expected the TAPAS to provide substantial incremental validity for predicting Will-Do, Adaptation, and Conduct criteria.

Figure 2 provides the results from hierarchical regression analyses using both the CO AA composite and the TAPAS facets to predict Can-Do, Will-Do, 12-month attrition, and misconduct attrition. In these analyses, the CO AA Composite was included in Step 1 and the TAPAS facets were added in Step 2. As expected, the TAPAS did not contribute substantially to the prediction of Can-Do criteria when the CO AA composite was already included in the model. However, the TAPAS composites did contribute substantial incremental validity to the prediction of the other criteria examined here. Adding the TAPAS facets to the regression equations for these outcomes increased the multiple *R*s by .21 for the Will-Do criterion, by .10 for 12-month attrition, and by .08 for misconduct attrition. Thus, the TAPAS facets can contribute to the prediction of a broader range of criteria. The validities of the TAPAS composites alone are also illustrated for comparison with the hierarchical regression results.

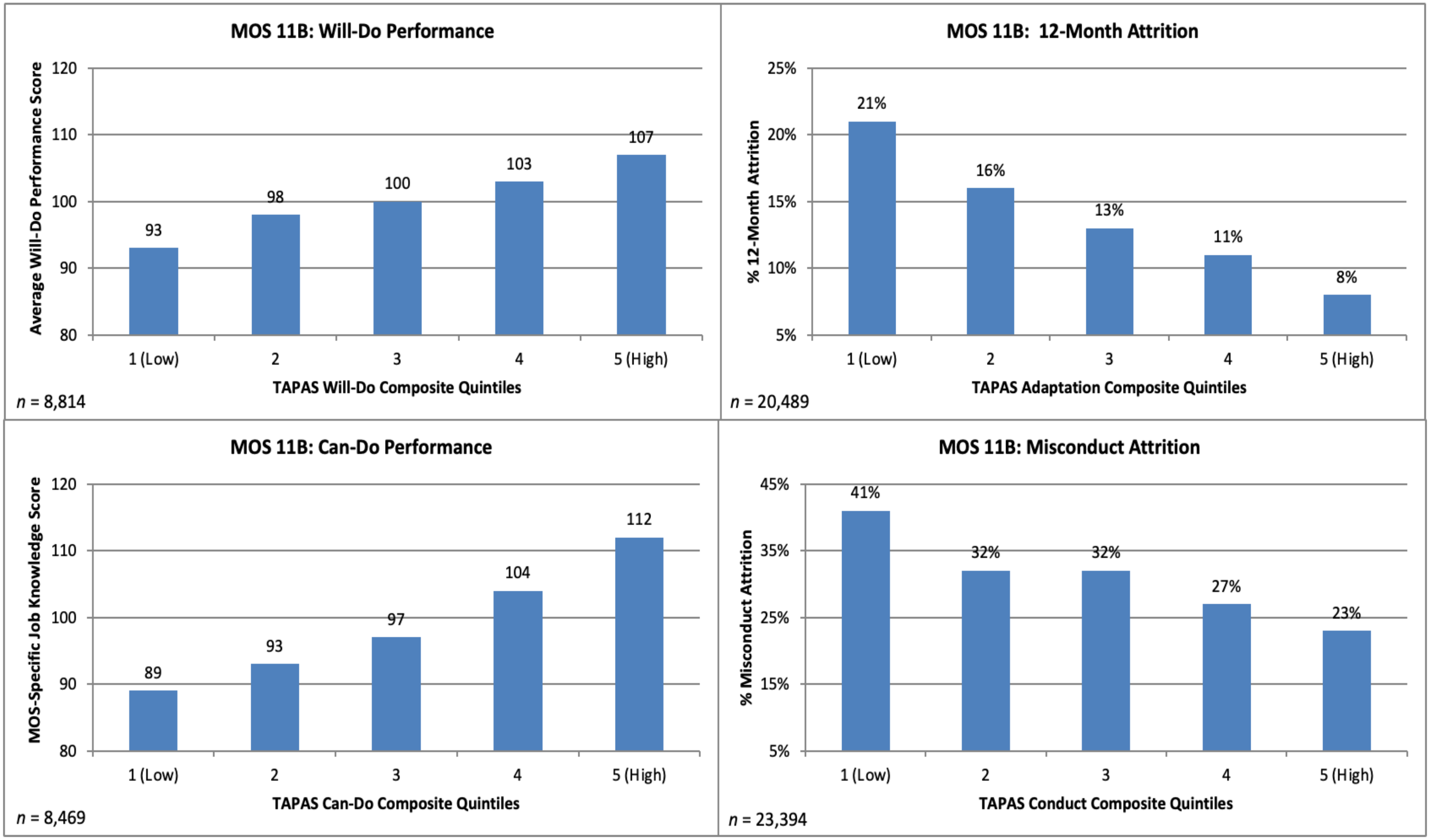

Figure 1. Quintile Plots for the TAPAS Composites in the Sample of Infantry

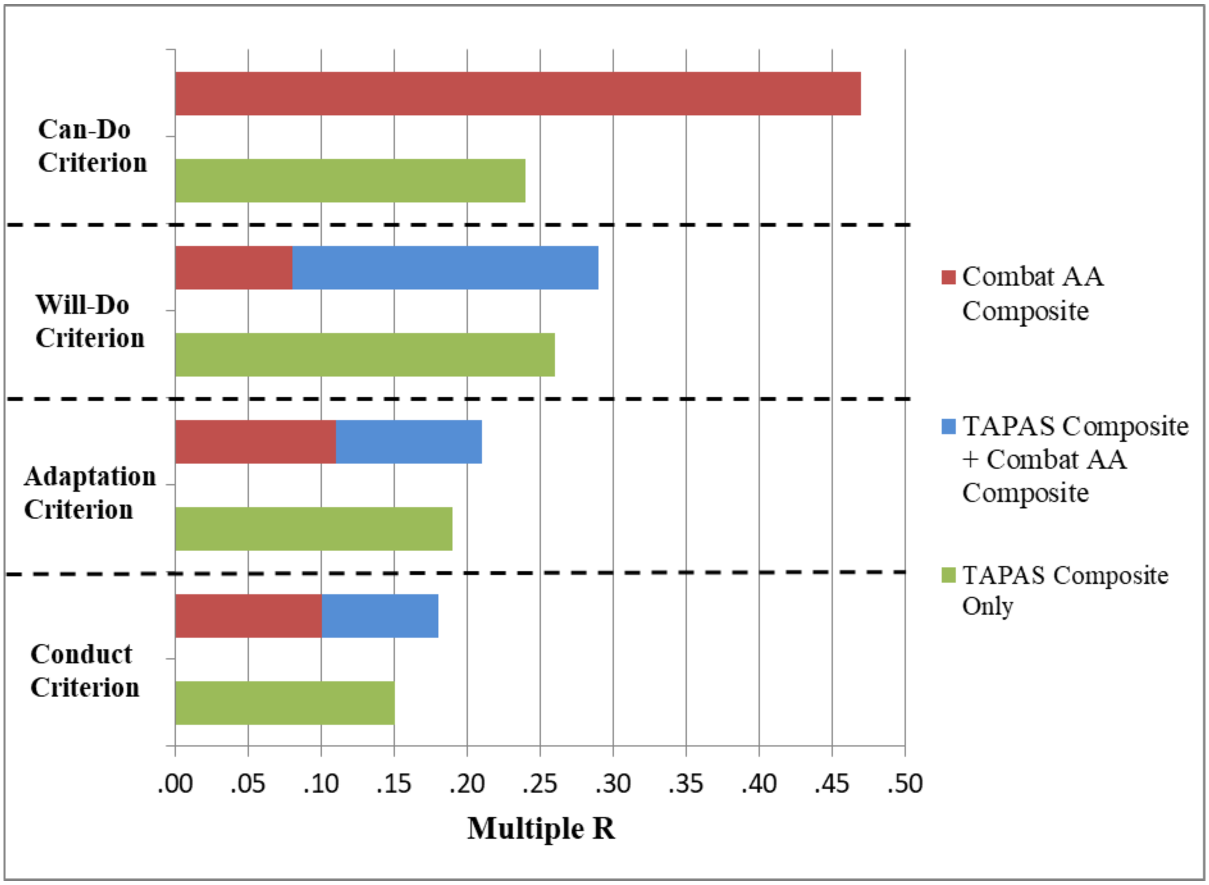

Figure 2. Incremental Validity of the TAPAS Facets over the Combat AA Composite for Predicting Criteria in the Sample of Infantry (11B)

Next, we conducted analyses to examine if the TAPAS could identify high performing Soldiers who, based on their low ASVAB AA scores (at or near the minimum qualification score), would not have been predicted to perform well. For these analyses, we examined a multiple hurdle approach in which scores on the TAPAS Will-Do, Adaptation, and Conduct composites were used to identify individuals with high potential despite their low ASVAB scores. Because the TAPAS Can-Do composite did not add incremental validity over the ASVAB, scores on this composite were excluded from these analyses. To use the other three TAPAS composites as multiple hurdles for selection, we identified cut scores on each composite that, when combined, would screen out approximately 20% of the sample. Note, however, that the cut scores applied to the individual composites were generally set to screen out more than 20% of the sample. This was necessary due to the correlations between these composites. Nevertheless, when combined, these cut scores resulted in approximately 80% of the sample passing and 20% failing the TAPAS screen.

Figure 3 illustrates the links between the CO AA composite, the TAPAS composites, and selected performance outcomes. In this figure, the CO AA composite scores were broken down into quintiles and presented on the X-axes, rather than the TAPAS quintiles as in previous figures. For this analysis, the lowest ASVAB CO quintile was broken down further into those individuals who scored high on the TAPAS composites (i.e., top 80% based on the multiple hurdles approach) and those who scored low (i.e., the bottom 20% based on the multiple hurdles approach). Results are shown for the average Will-Do criterion scores as well as the percentage of disciplinary incidents, training failures, and 12-month attrition in each group.

As shown in Figure 3, using the TAPAS in this way can help to identify the applicants with low scores on the AA composite who will perform as well as, or better than, other applicants who scored higher on the ASVAB. As shown in this figure, individuals who passed the TAPAS multiple hurdle screen had Will-Do criterion scores as high as individuals with AA composite scores between the 20th and 80th percentiles. By comparison, Soldiers who did not pass the TAPAS screen (i.e., bottom 20%) averaged 8 points lower on the Will-Do criterion. Similarly, 28% of Soldiers in the bottom quintile on the AA composite who did not pass the TAPAS screen engaged in disciplinary incidents. In contrast, the rates of disciplinary incidents for Soldiers who passed the TAPAS screen (18%) were more comparable to individuals with higher ASVAB scores. Similar results were obtained for both training failures and 12-month attrition.

The results presented in Figures 2 and 3 suggest that using both the TAPAS and the CO AA composite results in higher validity than using either of these predictors alone. Figure 2 suggests that both can add to the prediction of important Army outcomes. Figure 3 helps to elaborate on this relationship and suggests that high motivation (as indicated by high scores on the TAPAS composites) can compensate, at least partially, for low AA scores. Individuals scoring in the bottom 20% on the CO AA composite who were highly motivated (i.e., passed the TAPAS screen) performed substantially better than those who did not pass the TAPAS screen. In fact, in some cases, individuals in the lowest scoring CO AA group who passed the TAPAS performed better than other individuals who scored in the top 80% on the CO AA composite.

The results presented here indicate that the TAPAS may be useful as an MOS qualification tool for Infantry (11B). Individuals who scored high on the TAPAS Infantry composites had lower rates of 12-month and misconduct attrition and higher levels of can-do and will-do performance. Therefore, the Can-Do, Will-Do, Adaptation, and Conduct TAPAS composites may be useful for identifying high potential individuals who are motivated to perform well and be successful on the job. Importantly, these results also indicated that the TAPAS scales could provide incremental validity over the ASVAB AA composite that is currently used to screen candidates for Infantry (11B). In other words, the TAPAS composites appear to assess individual characteristics that are not assessed by the ASVAB but are related to success in Infantry. Therefore, these TAPAS composites may also be useful for identifying high potential individuals who may not have qualified for MOS 11B using ASVAB scores alone.

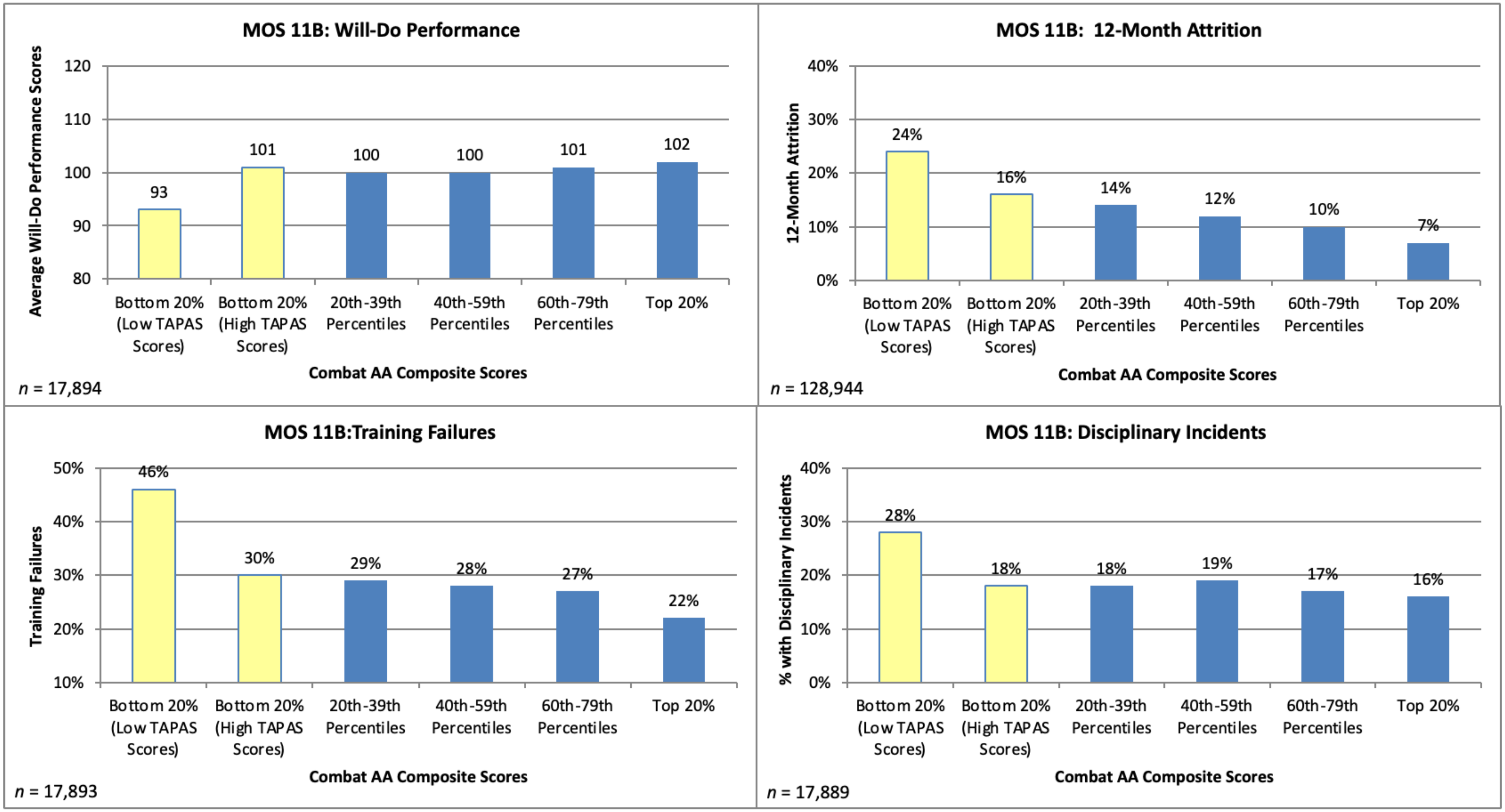

Figure 3. Comparisons using the MOS 11B TAPAS Composites to Supplement Combat AA Scores for Infantry

Predicting In-Unit Criteria

Next, we examined the prediction of the in-unit criteria. Due to the difficulty with collecting data from Soldiers in their units, the sample sizes for these analyses were substantially smaller (n = 220-496) than for the EOT criteria. Therefore, a reduced set of analyses were conducted. These results should be considered preliminary until they are replicated in larger samples.

The results of the analyses of in-unit criteria are shown in Tables 7 and 8. Although the outcomes assessed in-unit were slightly different than assessed at the EOT, the results shown in Table 7 were consistent with the EOT results in that the TAPAS showed strong validity for predicting the in-unit outcomes. The multiple *R*s ranged from .22 to .38 suggesting substantial validity for predicting in-unit criteria. Although the adjusted multiple *R*s were smaller in many cases, these decreases were due to the large number of predictors and the relatively small sample sizes for these analyses. Therefore, more research is needed to replicate these results in larger samples. Nevertheless, these results provide initial evidence that a number of TAPAS facets are related to in-unit criteria in Infantry (11B).

Similarly, the results in Table 8 suggest that the TAPAS also adds incremental validity over the ASVAB AA composites for predicting in-unit outcomes. This incremental validity was observed for all the outcomes examined here. In fact, in most cases, the TAPAS added .20 or more to the prediction of these outcomes. These results are not surprising given that personality traits are typically better predictors of attitudes and motivation than cognitive ability. The pattern of findings observed in this sample strongly suggests that a broader "whole person" assessment that incorporates both personality and cognitive factors would provide a better indication of an applicant's qualification for Infantry (11B). Therefore, a composite of ASVAB AA and TAPAS scores would be more useful for determining qualification for Infantry (11B) than AA scores alone. A combined composite would do a better job of identifying applicants who are a good fit for Infantry (11B) and screening out applicants with undesirable characteristics. In addition, to minimize the impact on recruiting, the minimum passing score could be adjusted so that the expected number of applicants who would qualify for Infantry under this new standard would not change from the current system.

Table 7. Standardized Regression Weights for Predicting In-Unit Criteria in Infantry (MOS 11B)

	Criteria														
TAPAS Facets	**MOS Fit**	**Aff. Com.**	**Car. Int.**	**Reenl. Int.**	**Res.**	**OCB**	**CWB**	**MTL SN**	**MTL Aff.**	**MTL Non.**	**Dep. Sat.**	**Obj. Perf.**	**Disc.**	**APFT**	**Will-Do**
Achievement	-.01	.03	.06	.01	-.04	.03	-.04	.04	.08	-.11	**.22**	.11	-.11	-.09	.08
Dominance	-.06	**-.14**	-.10	-.11	.15	.13	.03	.13	**.22**	-.10	-.20	.08	.09	.09	.02
Even Tempered	**-.16**	-.07	-.09	-.12	.01	-.03	-.03	-.05	-.10	-.04	**-.23**	.08	**-.15**	.13	-.02
Intellectual Efficiency	.13	.02	.01	.04	-.02	.12	.00	.08	.11	**-.18**	.08	.12	.09	.05	.09
Non-delinquency	.03	**.14**	.03	.05	.00	-.01	**-.15**	.06	-.02	-.13	.03	-.02	.08	.02	.06
Optimism	.01	-.05	-.10	-.02	-.13	-.07	.08	.04	.03	-.11	.08	**.15**	-.03	.08	.01
Order	-.06	-.09	**.13**	.13	.08	-.01	-.02	-.11	-.03	**.16**	.05	.00	-.11	-.01	.01
Physical Conditioning	-.04	-.03	-.09	-.11	.08	.07	.10	.00	.04	.06	-.13	-.03	-.08	**.25**	.01
Selflessness	.09	**.15**	.07	.09	**.20**	**.18**	**-.15**	.06	.02	.08	-.07	.03	-.10	.08	**.16**
Sociability	-.02	-.08	-.11	-.08	-.10	.04	.03	.11	**.14**	.10	-.06	.08	.11	.07	-.05
Tolerance	.09	**.20**	.04	.02	.05	.02	.03	-.03	-.06	.00	.17	-.08	.04	**-.18**	.01
Multiple R	.22	.37	.27	.25	.29	.31	.32	.26	.38	.36	.35	.32	.30	.34	.24
Adjusted Multiple R	.00	.27	.10	.03	.14	.18	.20	.00	.29	.27	.00	.20	.16	.23	.00

Note: Sample sizes for these analyses ranged from 220 (Deployment Satisfaction) to 496 (most other outcomes). Bold values are statistically significant, $p < .10$.
Aff. Com. = Affective Commitment; Car. Int. = Career Intentions; Reenl. Int. = Reenlistment Intentions; Res. = Resilience; OCB = Organizational Citizenship Behavior; CWB = Counterproductive Work Behavior; MTL SN = Motivation to Lead-Social Normative; MTL Aff. = Motivation to Lead-Affective; MTL Non. = Motivation to Lead-Noncalculative; Dep. Sat. = Deployment Satisfaction; Obj. Perf. = Objective Performance; Disc. = Disciplinary Incidents.

Table 8. Incremental Validity for Predicting In-Unit Criteria in Infantry (MOS 11B)

	Criteria														
Facets	**MOS Fit**	**Aff. Com.**	**Car. Int.**	**Reenl. Int.**	**Res.**	**OCB**	**CWB**	**MTL SN**	**MTL Aff.**	**MTL Non.**	**Dep. Sat.**	**Obj. Perf.**	**Disc.**	**APFT**	**OTC**
ASVAB AA-Combat	-.02	.07	.03	.03	-.10	-.02	.13	.03	.03	-.06	.14	**.14**	-.07	-.02	.04
Multiple R	.02	.03	.04	.05	.11	.01	.14	.06	.06	.18	.13	.18	.05	.03	.04
Achievement	-.01	.03	.07	.03	-.04	.03	-.03	.04	.08	-.11	.20	.11	-.12	-.07	.08
Dominance	-.05	**-.15**	-.10	-.10	**.15**	.14	.03	.14	**.22**	-.10	-.20	.06	.09	.10	.02
Even Tempered	**-.15**	-.08	-.10	-.13	.03	-.02	-.06	-.05	-.11	-.03	**-.26**	.05	-.14	.13	-.03
Intellectual Efficiency	.15	.01	-.01	.01	.02	.13	-.04	.09	.11	**-.16**	.04	.09	.11	.04	.08
Non-delinquency	.02	**.15**	.02	.03	-.01	-.02	**-.15**	.05	-.03	-.13	.03	.00	.09	.00	.05
Optimism	.02	-.05	-.10	-.01	-.12	-.06	.07	.04	.02	-.11	.05	**.13**	-.03	.10	.01
Order	-.04	-.07	**.14**	.13	.07	.00	.00	-.08	.00	**.14**	.08	.02	-.13	-.01	.03
Physical Conditioning	-.03	-.02	-.10	-.12	.09	.07	.09	.01	.05	.07	-.12	-.03	-.07	**.24**	.01
Selflessness	.09	**.15**	.09	.12	**.18**	.18	-.13	.06	.02	.06	-.05	.05	-.12	.09	**.17**
Sociability	-.04	-.08	-.11	-.08	-.11	.03	.05	.09	.13	.09	-.06	.10	.11	.07	-.05
Tolerance	.09	**.20**	.03	.01	.05	.02	.03	-.04	-.06	.00	.16	-.08	.05	**-.20**	.01
Multiple R	.21	.37	.28	.26	.31	.31	.34	.26	.39	.37	.37	.34	.31	.34	.25
Adjusted Multiple R	.00	.26	.08	.00	.16	.17	.22	.00	.29	.26	.00	.21	.17	.22	.00

Note: Sample sizes for these analyses ranged from 220 (Deployment Satisfaction) to 496 (most other outcomes). Bold values are statistically significant, $p < .10$. The regression weights for both the AA scores and the TAPAS facets are the weights from the combined regression model.
Aff. Com. = Affective Commitment; Car. Int. = Career Intentions; Reenl. Int. = Reenlistment Intentions; Res. = Resilience; OCB = Organizational Citizenship Behavior; CWB = Counterproductive Work Behavior; MTL SN = Motivation to Lead-Social Normative; MTL Aff. = Motivation to Lead-Affective; MTL Non. = Motivation to Lead-Noncalculative; Dep. Sat. = Deployment Satisfaction; Obj. Perf. = Objective Performance; Disc. = Disciplinary Incidents.

TAPAS VALIDITY: CAVALRY SCOUTS (MOS 19D)

Predicting EOT and Attrition Criteria

Table 9 shows the descriptive statistics for the TAPAS scales and the criteria in Cavalry Scouts (19D). Again, the raw TAPAS facet scores were normed and transformed into standardized scores within each version, so a score of + 1.0 meant that an examinee was 1.0 SD above the mean with respect to the norm group. In other words, departures from the mean of zero indicate differences between this group and the Army-wide sample of applicants used for norming. As such, Table 9 suggests that the Cavalry Scouts (19D) in this sample had higher mean scores on Physical Conditioning but lower mean scores on Order and Selflessness relative to the Army-wide sample used for norming. Table 10 shows the correlations between the TAPAS facets and the four criterion composites.

Table 9. Descriptive Statistics for the TAPAS Facets and Criteria in the Sample of Cavalry Scouts (MOS 19D)

TAPAS Facets	Sample Size	Normed[a] Mean	Normed[a] Standard Deviation
Achievement	21,303	-.03	.99
Dominance	21,296	-.03	.99
Even Tempered	21,296	-.01	1.00
Intellectual Efficiency	21,296	-.06	.96
Non-Delinquency	11,892	-.03	.99
Optimism	21,296	.01	.97
Order	19,791	-.17	.94
Physical Conditioning	21,296	.15	.97
Selflessness	19,791	-.12	.97
Sociability	19,659	-.03	.99
Tolerance	19,666	-.04	.98
Criteria			
Can-Do Criterion[b]	2,477	.16	1.70
Will-Do Criterion[b]	2,529	.00	6.46
12-Month Attrition[b]	35,869	.11	.31
Misconduct Attrition[b]	16,685	.19	.39

[a] TAPAS scores were standardized based on norming samples of approximately 34,000 to 60,000 (depending on the TAPAS version) Army examinees who completed the TAPAS at the MEPS.

[b] The criteria were not normed and, therefore, only the raw scores are reported.

Table 10. Correlations between the TAPAS Facets and the Criteria in the Sample of Cavalry Scouts (MOS 19D)

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. Achievement	1.00															
2. Dominance	.31	1.00														
3. Even Tempered	.14	-.02	1.00													
4. Intellectual Eff.	.30	.29	.12	1.00												
5. Non-Delinquency	.20	-.01	.25	.03	1.00											
6. Optimism	.18	.12	.22	.13	.15	1.00										
7. Order	.21	.10	.04	.12	.15	.04	1.00									
8. Physical Cond.	.25	.21	-.07	.08	-.03	.06	.11	1.00								
9. Selflessness	.17	.07	.15	.05	.19	.09	.11	.03	1.00							
10. Sociability	.13	.26	.07	.11	.01	.16	.04	.06	.16	1.00						
11. Tolerance	.11	.04	.17	.14	.07	.09	.05	-.03	.26	.19	1.00					
12. Can-Do Criterion	.01	.03	.04	.12	-.01	.04	-.04	.00	.01	-.09	.00	1.00				
13. Will-Do Criterion	.14	.13	.00	.07	.04	.07	.02	.16	.03	.06	.02	.14	1.00			
14. 12-Month Attrition	-.01	-.03	.01	.01	.01	-.03	.03	-.09	.02	.01	.03	-.02	-.11	1.00		
15. Misconduct Attrition	.01	.04	-.01	.03	-.02	.00	.02	.01	.00	.07	.00	-.06	.00	.47	1.00	
16. ASVAB CO AA	.07	.10	.05	.29	-.05	.06	-.13	.01	-.07	-.11	-.04	.32	.05	-.09	-.08	1.00

Note: All correlations above .04 are statistically significant, $p < .05$. Sample sizes for these correlations ranged from 1,345 to 21,303. ASVAB CO AA = Armed Services Vocational Aptitude Battery Combat Aptitude Area Composite.

The scales comprising the TAPAS composites for predicting the Can-Do, Will-Do, Adaptation, and Conduct criteria in Cavalry Scouts (19D) are shown in Table 11. The values presented in this table represent the regression weights for each of the TAPAS facets predicting each criterion. The multiple *R*s for the four criteria ranged from .14 to .25, and the adjusted *R*s were .20 and .22 for Can-Do and Will-Do, respectively. Again, these results indicate that the TAPAS facets were moderate predictors of Can-Do, Will-Do, Adaptation, and Conduct criteria in this sample of Cavalry Scouts (19D).

The largest effects were observed for the Will-Do criterion, with a multiple *R* of .25. Given that the APFT scores were an important part of the Will-Do criterion, it is not surprising that the TAPAS Physical Conditioning facet was the best predictor of this criterion. Similarly, Physical Conditioning was also the strongest predictor of Adaptation. This result reflects the physical nature of military training and performance in Cavalry Scouts (19D). However, consistent with the results in Infantry, the multiple correlation for predicting the Can-Do criterion was also substantial, and the Intellectual Efficiency facet played a significant role in predicting this outcome.

Table 11. Regression Weights for the TAPAS Facets in each Composite for Cavalry Scouts (MOS 19D)

	Criteria			
TAPAS Facets	**Can-Do**	**Will-Do**	**Adaptation[a]**	**Conduct[a]**
Achievement	-.03	.06	-.04	.07
Dominance	.01	.05	.06	**-.12**
Even Tempered	.02	-.01	.03	-.02
Intellectual Efficiency	**.12**	.04	-.05	**-.12**
Non-delinquency	.00	**.07**	-.01	.02
Optimism	**.11**	**.09**	.07	-.02
Order	-.04	-.02	**-.12**	**-.14**
Physical Conditioning	.00	**.13**	**.27**	.00
Selflessness	.06	.02	-.07	-.02
Sociability	**-.17**	.04	-.04	**-.27**
Tolerance	-.03	-.02	-.06	**.13**
Multiple R	.23	.25	.14	.19
Adjusted Multiple R	.20	.22	--	--

Note: Samples sizes: Can-Do *n* = 750; Will-Do *n* = 778; Adaptation *n* = 5,202; Conduct *n* = 2,720. To be consistent with the results for other MOS, all TAPAS scales were included in each composite. Bold values indicate significant regression weights.

[a] The regression weights for the Can-Do and Will-Do criteria are the standardized regression weights. However, due to the dichotomous nature of the attrition outcomes, these analyses were conducted using logistic regression. Therefore, the results presented for these outcomes are the unstandardized regression weights.

Table 12 shows the significant correlations between the four MOS-specific TAPAS composites for Cavalry Scouts (19D) and the various criteria measured in this dataset. As shown in this table, the scores on all four TAPAS composites were significantly correlated with a number of outcomes. Again, the TAPAS composite for the Will-Do criterion showed the largest number of correlations across the four composites. This is not surprising given the breadth of the Will-Do criterion. The TAPAS composites for the Can-Do, Adaptation, and Conduct criteria were also significantly correlated with a number of outcomes. For comparison, significant correlations between the ASVAB CO AA composite and both the TAPAS composites and the criteria were also included. As expected, the ASVAB CO composite was most highly correlated with the TAPAS Can-Do composite and Can-Do criteria.

Table 12. Significant Correlations between the Criterion Measures and the TAPAS Composites in the Sample of Cavalry Scouts (MOS 19D)

	Cavalry Scout TAPAS Composites				
Criteria	**TAPAS Can-Do Composite**	**TAPAS Will-Do Composite**	**TAPAS Adaptation Composite**	**TAPAS Conduct Composite**	**ASVAB CO AA Composite**
ASVAB CO AA Composite	.29	.09	.06		--
Can-Do Criterion Composite	.25			.08	.32
MOS-Specific Job Knowledge Test	.21				.30
Army-Wide Job Knowledge Test	.24			.09	.28
Will-Do Criterion Composite		.24	.10	-.12	.05
APFT Scores		.24	.20	-.11	.06
Affective Commitment		.10			-.05
Normative Commitment		.13			.15
Army Career Intentions		.09			-.06
Army Reenlistment Intentions		.11			
Attrition Cognitions		-.18			-.11
Army Life Adjustment		.22	.08	-.15	
Needs-Supply Fit		.12			
Training Achievement	-.08				-.06
Training Failure		-.14	-.09	.07	
Disciplinary Incidents	-.09	-.09			-.08
12-Month Attrition[a]		-.04	-.10		-.09
Misconduct Attrition[a]	-.04	.07		-.15	-.08

Note: Sample sizes for these correlations ranged from 322 to 27,107. [a] Correlations with both 12-month and misconduct attrition are Pearson correlations. Due to the dichotomous attrition variables, these correlations were expected to be lower than the multiple *R*s in Table 12, which were based on a logistic regression analyses.

Figure 4 illustrates the practical importance of these relationships for the outcomes in Cavalry Scouts (19D). These graphs examine the same outcomes explored in Figure 1 and, therefore, provide a point of comparison with Infantry (11B). On the X-axes are quintiles for the scores on the four TAPAS composites, and the Y-axes represent the scores on the criterion variables. Consistent with Figure 1, the Can-Do and Will-Do criteria were rescaled to have a mean = 100, SD = 20 to make these plots more interpretable. In addition, because 12-month attrition and misconduct attrition are dichotomous variables, the Y-axes for these graphs represent the percentage of individuals in each quintile that left the Army either within 12 months or due to misconduct. Again, note that these attrition outcomes are negatively related to their corresponding TAPAS composites. Therefore, lower TAPAS scores (i.e., the bottom quintiles) should lead to higher percentages of 12-month and misconduct attrition. The Y-axes for the Can-Do and Will-Do plots are scaled to range from +/- 1 standard deviation from the mean of the criterion.

As shown in Figure 4, the TAPAS was useful for identifying individuals with high scores on the Can-Do and Will-Do criteria in Cavalry Scouts (19D). Soldiers with scores in the bottom 20% on the TAPAS Will-Do composite had average scores that were 14 points lower on the Will-Do criterion than those in the highest 20%. Similarly, Soldiers with scores in the lowest quintile for the TAPAS Can-Do composite scored, on average, more than a full standard deviation (20 points) lower on the Can-Do criterion than those in the highest quintile. The TAPAS composites also predicted 12-month and misconduct attrition in this MOS. Only 9% of individuals in the upper quintile of the Adaptation composite left the Army within 12 months compared to 21% of individuals in the lowest scoring group. For misconduct attrition, Soldiers who scored in the top 20% on the TAPAS composite were less likely to attrit due to misconduct relative to their peers in the lowest quintiles (15% compared to 32%, respectively). Overall, it appears that the TAPAS composites developed here have important practical implications for Army outcomes.

Figure 5 illustrates the incremental validity of the TAPAS composites in Cavalry Scouts (19D). Consistent with our approach in Infantry (11B), the ASVAB CO AA composite was included in Step 1 of the hierarchical analyses, and the TAPAS scales were added in Step 2. As expected, the TAPAS did not contribute substantially to the prediction of Can-Do criteria when the CO AA composite was already in the model. In contrast, the TAPAS composites did provide incremental validity for predicting Will-Do, Adaptation, and Conduct criteria. Adding the TAPAS facets to the regression equations increased the multiple *R*s by .19, .08, and .11 for the Will-Do, Adaptation, and Conduct composites, respectively. These results indicate that the TAPAS composites developed in this MOS can contribute to the prediction of important criteria even after controlling for the ASVAB, which is currently used for MOS qualification in Cavalry Scouts (19D). Most notably, the AA composite was only weakly correlated with Will-Do performance in this MOS, but adding the TAPAS composite increased the multiple correlation by .19. The validities of the TAPAS composites alone are also illustrated for comparison with the hierarchical regression results.

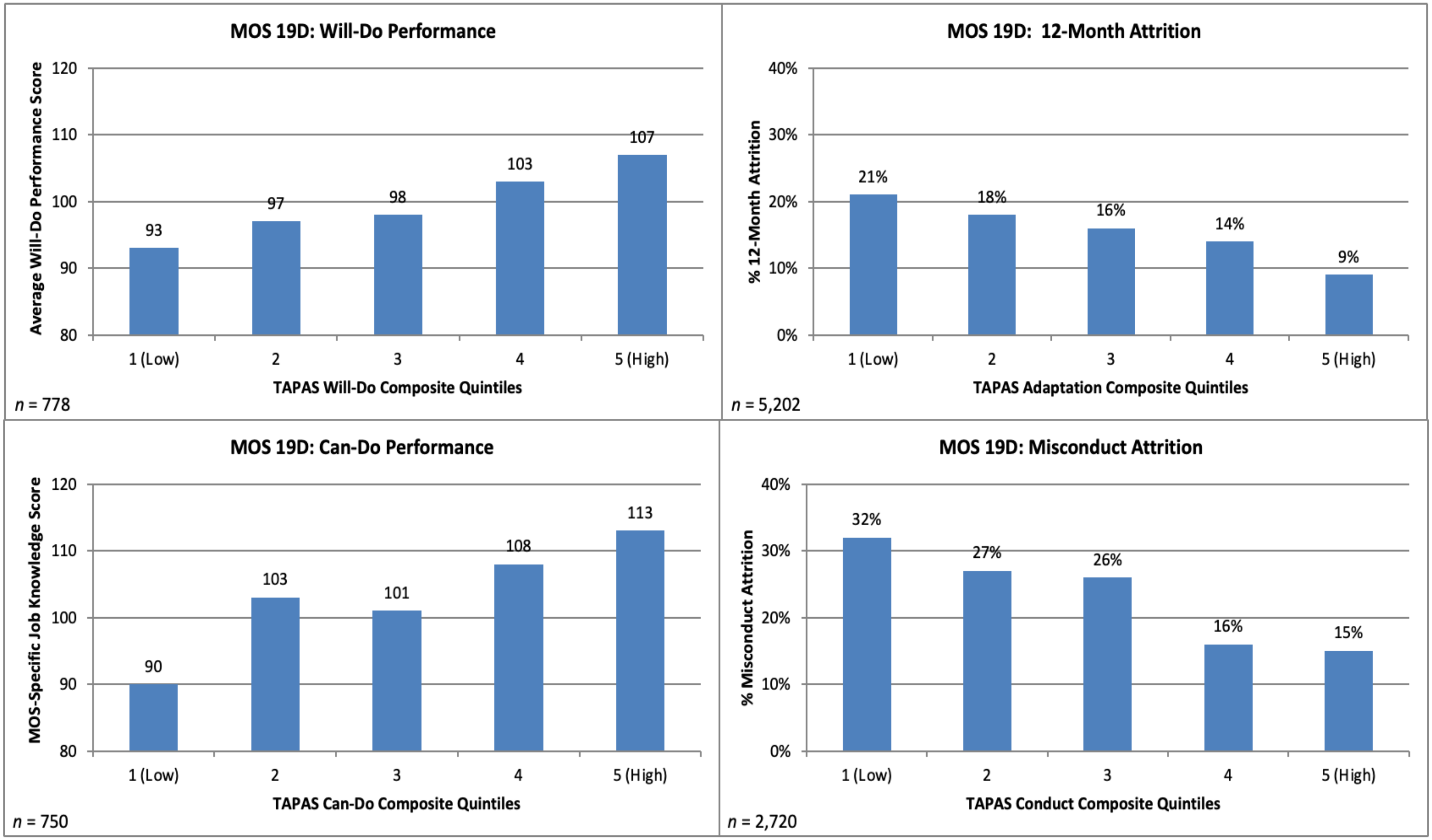

Figure 4. Quintile Plots for the TAPAS Composites in the Sample of Cavalry Scouts

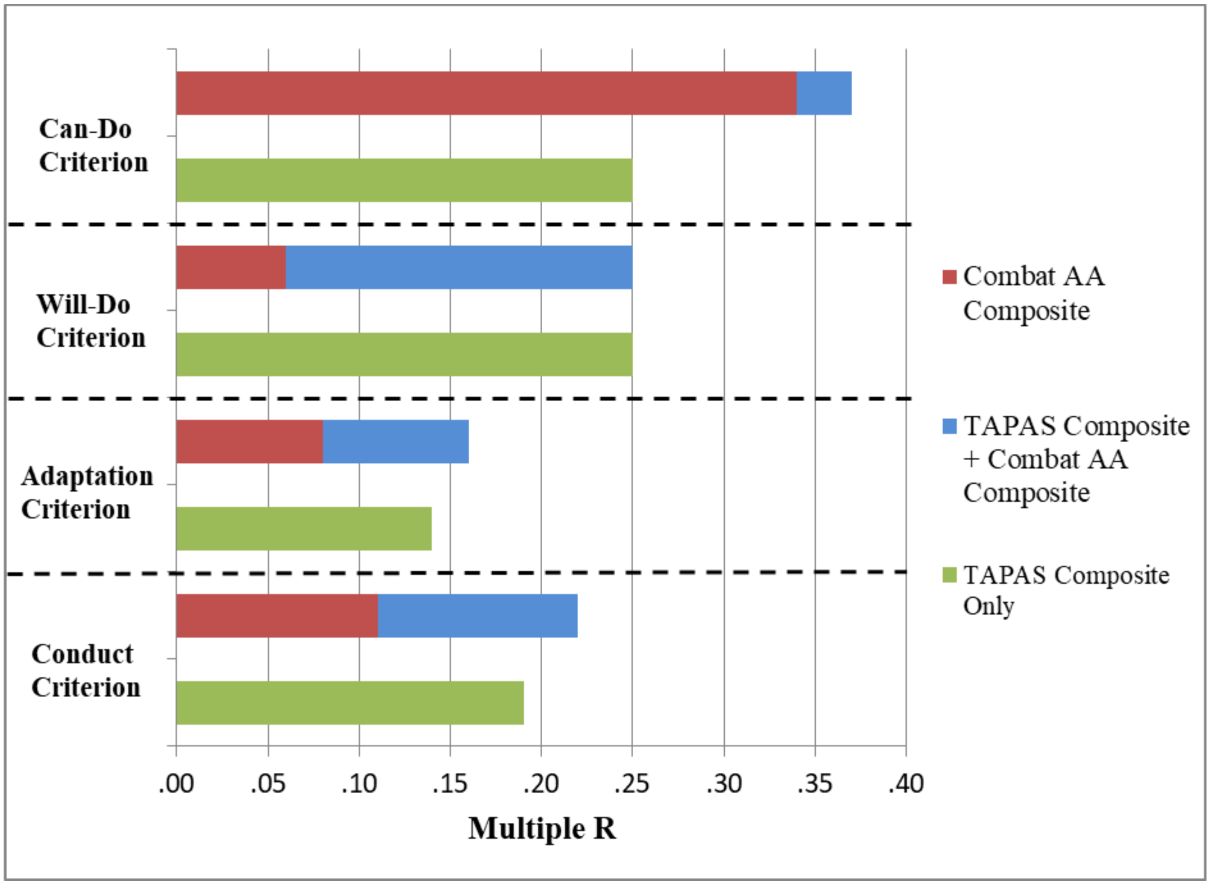

Figure 5. Incremental Validity of the TAPAS Composites over the Combat AA Composite for Predicting Criteria in the Sample of Cavalry Scouts (MOS 19D)

Next, we conducted analyses to examine if the TAPAS can better identify high performing Soldiers who, based on their low ASVAB AA scores (at or near the minimum qualification score), would not have been predicted to perform well in this MOS. To do so, we used the same multiple hurdle approach that was employed for Infantry (11B) but using the TAPAS Will-Do, Adaptation, and Conduct composites estimated for Cavalry Scouts (19D). These composites were treated as multiple hurdles, and cut scores were selected for each composite to screen out the bottom 20% of the sample.

Figure 6 illustrates the links between the CO AA composite, the TAPAS multiple hurdle screen, and selected performance outcomes. Similar to the graph presented for Infantry (11B), the AA composite scores were broken down into quintiles and presented on the X-axes. However, the lowest quintile is broken down further into those individuals who passed the TAPAS multiple hurdle screen (i.e., top 80%) and those who did not pass (i.e., the bottom 20%). Results are shown for the average Will-Do criterion scores as well as the percentage of disciplinary incidents, training failures, and 12-month attrition in each group.

As shown in Figure 6, using the TAPAS composites in this way can help to identify the applicants with low scores on the AA composite who are likely to perform well in this MOS. For example, Soldiers in the bottom 20% on the AA composite who passed the TAPAS screen had higher scores on the Will-Do outcome than individuals who did not pass the TAPAS screen.

Similarly, 37% of Soldiers in the bottom quintile on the AA composite who did not pass the TAPAS screen failed during training compared to only 23% of Soldiers who passed the TAPAS screen. In fact, the rates of training failures for individuals who passed the TAPAS screen were lower than for individuals scoring in the 40th percentile or above on the AA composite. Soldiers that passed the TAPAS screen also engaged in fewer disciplinary incidents than individuals who did not pass and had rates of disciplinary incidents that were more comparable to individuals with higher scores on the AA composite. For predicting 12-month attrition, individuals who scored in the bottom 20% on the AA composite but passed the TAPAS screen had similar attrition rates to Soldiers who did not pass the TAPAS screen. This is likely due to the smaller sample size and the higher levels of sampling error for Cavalry Scouts (19D) than for Infantry (11B). Nevertheless, based on the results for other outcomes in this sample, it appears that the TAPAS composites may be useful for expanding the potential pool of accessions to meet personnel requirements in Cavalry Scouts (19D).

The results presented in Figures 5 and 6 suggest that using both the TAPAS and the ASVAB AA composite will result in higher validity than using either of these predictors alone. Figure 6 helps to elaborate on this relationship and suggests that high motivation (as indicated by high scores on the TAPAS composites) can compensate, at least partially, for low AA scores.

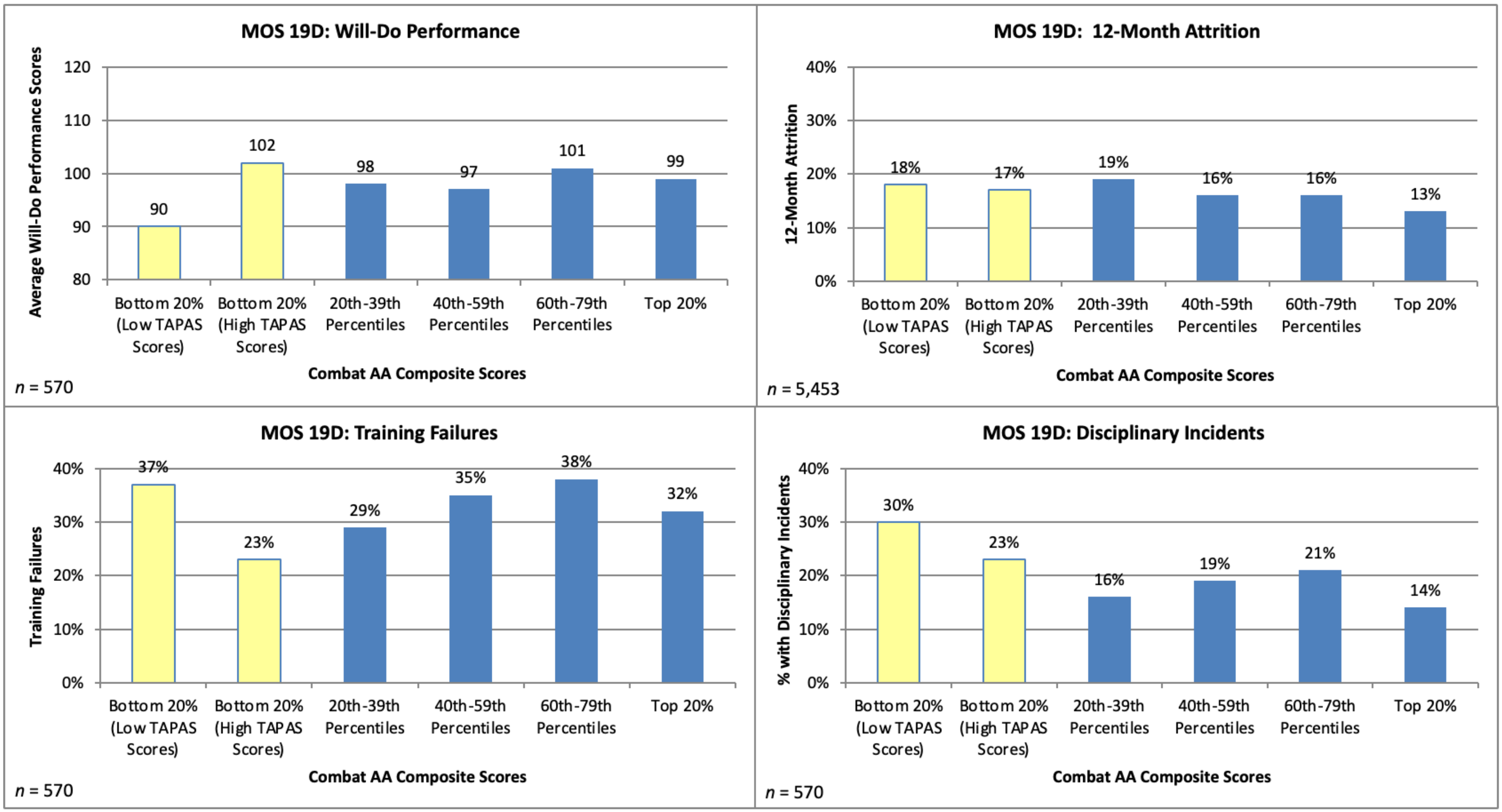

Figure 6. Comparisons using the MOS 19D TAPAS Composites to Supplement the Combat AA Scores for Cavalry Scouts

35

Predicting In-Unit Criteria

Next, we examined the prediction of the in-unit criteria. As with the results for the Infantry (11B), the sample sizes for these analyses were substantially smaller (n = 164-172) than for the EOT criteria. Therefore, a reduced set of analyses were conducted, and these results should be considered preliminary until they are replicated in larger samples. In addition, due to the even smaller sample sizes for the TAPAS Non-Delinquency facet and the deployment satisfaction outcome, these variables were excluded from these analyses.

The results of the analyses of in-unit criteria are shown in Tables 13 and 14. Although the specific predictors of each outcome may vary, the overall results shown in Table 13 were largely consistent with the results in Infantry (11B). Specifically, the multiple *R*s ranged from .18 to .45 suggesting substantial validity for predicting in-unit criteria in Cavalry Scouts (19D). Again, the substantially smaller adjusted multiple *R*s were due to the large number of predictors and the relatively small sample sizes for these analyses. Therefore, more research is needed to replicate these results in larger samples. Nevertheless, these results provide initial evidence that several TAPAS facets are related to in-unit criteria in this sample of Cavalry Scouts (19D).

Similarly, the results in Table 14 demonstrate that the TAPAS also adds incremental validity over the ASVAB AA composites for predicting in-unit outcomes. This incremental validity was observed for all the outcomes examined here. In fact, in several cases, the TAPAS added more than .30 to the multiple *R* for predicting these outcomes. For example, adding the TAPAS to the prediction of the Will-Do criterion added .38 to the multiple *R*. This is important because the CO AA composite did not predict this or many of the other attitudinal and motivational criteria well. Therefore, consistent with the results found for Infantry (11B), this pattern of findings suggests that a combination of the ASVAB and TAPAS can predict a broader range of outcomes and provide a more comprehensive picture of individuals' potential for success in the Army.

In addition, the results presented here indicate that the TAPAS may also be useful as an MOS qualification tool for Cavalry Scouts (19D). Individuals who scored high on the TAPAS composites for Cavalry Scouts (19D) had higher levels of Can-Do and Will-Do performance and lower rates of 12-month and misconduct attrition. Again, these results also indicated that the TAPAS facets could provide incremental validity over the ASVAB AA composite that is currently used to screen candidates for this MOS. In other words, the TAPAS composites appear to assess individual characteristics that are not assessed well by the ASVAB but are related to success in Cavalry Scouts (19D). Therefore, these TAPAS composites may also be useful for identifying high potential individuals who may not have qualified for Cavalry Scouts (19D) using their ASVAB scores alone.

Table 13. Standardized Regression Weights for Predicting In-Unit Criteria in the Sample of Cavalry Scouts (MOS 19D)

	Criteria													
TAPAS Facets	**MOS Fit**	**Aff. Com.**	**Car. Int.**	**Reenl. Int.**	**Res.**	**OCB**	**CWB**	**MTL SN**	**MTL Aff.**	**MTL Non.**	**Obj. Perf.**	**Disc.**	**APFT**	**Will-Do**
Achievement	.03	.01	-.04	-.07	.08	.13	-.15	**.19**	.05	**-.17**	-.05	-.04	.11	.13
Dominance	.07	.09	.04	.06	.00	-.03	.13	.10	**.19**	**-.22**	**.21**	-.01	-.12	.06
Even Tempered	**-.16**	**-.14**	-.08	-.08	**-.22**	**-.20**	.02	-.02	-.09	-.05	.04	**.15**	**-.17**	**-.22**
Intellectual Efficiency	.05	.02	.05	.02	.11	**.19**	**-.16**	.01	**.18**	**-.19**	-.01	.04	.13	.13
Non-delinquency	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Optimism	-.04	**-.14**	-.10	**-.15**	-.07	.02	-.02	-.03	-.05	-.05	.08	.00	.02	-.06
Order	**-.18**	-.11	.-.05	-.08	.02	.03	-.08	**-.15**	-.09	**.14**	-.02	.07	-.02	-.12
Physical Conditioning	-.01	-.09	-.06	-.04	**.15**	-.02	-.09	.09	**.16**	.11	-.05	.02	.09	.01
Selflessness	**.21**	.10	.12	.05	.10	**.16**	-.03	.08	.10	.02	-.09	-.06	-.02	.13
Sociability	.13	**.22**	**.22**	**.27**	**.17**	-.01	.00	.03	.06	.12	.00	.03	.10	**.15**
Tolerance	-.07	**.14**	.09	.09	.02	-.02	-.04	.01	-.02	.04	.03	-.01	-.09	.02
Multiple R	.32	.33	.29	.30	.39	.35	.30	.33	.45	.45	.23	.18	.28	.40
Adjusted Multiple R	.22	.24	.16	.19	.32	.26	.18	.23	.39	.39	.00	.00	.14	.32

Note: Sample sizes for these analyses ranged from 164 (Objective Performance) to 172 (most other outcomes). Non-Delinquency (*n* = 86) and deployment satisfaction (*n* = 93) were excluded from these analyses due to the relatively small sample sizes for these variables. Bold values are statistically significant, $p < .10$.
Aff. Com. = Affective Commitment; Car. Int. = Career Intentions; Reenl. Int. = Reenlistment Intentions; Res. = Resilience; OCB = Organizational Citizenship Behavior; CWB = Counterproductive Work Behavior; MTL SN = Motivation to Lead-Social Normative; MTL Aff. = Motivation to Lead-Affective; MTL Non. = Motivation to Lead-Noncalculative; Obj. Perf. = Objective Performance; Disc. = Disciplinary Incidents.

Table 14. Incremental Validity for Predicting In-Unit Criteria in the Sample of Cavalry Scouts (MOS 19D)

	Criteria													
Facets	**MOS Fit**	**Aff. Com.**	**Car. Int.**	**Reenl. Int.**	**Res.**	**OCB**	**CWB**	**MTL SN**	**MTL Aff.**	**MTL Non.**	**Obj. Perf.**	**Disc.**	**APFT**	**Will-Do**
ASVAB AA-Combat	-.05	-.02	-.05	-.07	.00	-.08	.13	.04	.05	-.14	-.10	-.06	-.06	-.05
Multiple R	.01	.05	.07	.11	.01	.01	.06	.11	.15	.28	.04	.04	.01	.02
Achievement	.05	.03	-.04	-.06	.09	.15	**-.16**	**.20**	.05	**-.16**	-.05	-.04	.13	**.15**
Dominance	.08	.10	.04	.06	.00	-.01	.12	.11	**.19**	**-.20**	**.22**	.00	-.12	.07
Even Tempered	**-.16**	**-.14**	-.08	-.08	**-.22**	**-.20**	.01	-.03	-.10	-.04	.05	**.15**	**-.16**	**-.22**
Intellectual Efficiency	.03	-.01	.04	.02	.09	**.20**	**-.18**	-.02	**.16**	**-.15**	.03	.07	.12	.12
Non-delinquency	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Optimism	-.04	**-.15**	-.11	**-.15**	-.08	.03	-.03	-.04	-.06	-.03	.10	.01	.02	-.06
Order	**-.18**	-.10	-.08	-.11	.02	.02	-.06	-.13	-.08	.12	-.04	.07	-.02	-.13
Physical Conditioning	.00	-.08	-.07	-.05	**.15**	-.01	-.10	.09	**.17**	**.13**	-.04	.03	.10	.02
Selflessness	**.19**	.08	.12	.05	.09	**.15**	-.02	.07	.10	.01	-.09	-.07	-.03	.12
Sociability	.13	**.23**	**.24**	**.28**	**.18**	-.03	.02	.03	.06	.09	-.03	.01	.10	**.16**
Tolerance	-.06	**.15**	.08	.08	.02	-.02	-.04	.02	-.02	.04	.03	-.01	-.09	.02
Multiple R	.32	.34	.31	.32	.39	.35	.31	.34	.46	.46	.25	.19	.29	.40
Adjusted Multiple R	.20	.24	.17	.21	.31	.25	.18	.23	.39	.39	.00	.00	.13	.32

Note: Sample sizes for these analyses ranged from 164 (Objective Performance) to 172 (most other outcomes). Non-Delinquency (*n* = 86) and deployment satisfaction (*n* = 93) were excluded from these analyses due to the relatively small sample sizes for these variables. Bold values are statistically significant, $p < .10$. The regression weights for both the AA scores and the TAPAS facets are the weights from the combined regression model.
Aff. Com. = Affective Commitment; Car. Int. = Career Intentions; Reenl. Int. = Reenlistment Intentions; Res. = Resilience; OCB = Organizational Citizenship Behavior; CWB = Counterproductive Work Behavior; MTL SN = Motivation to Lead-Social Normative; MTL Aff. = Motivation to Lead-Affective; MTL Non. = Motivation to Lead-Noncalculative; Obj. Perf. = Objective Performance; Disc. = Disciplinary Incidents.

TAPAS VALIDITY: M1 ARMOR CREWMAN (MOS 19K)

Predicting EOT and Attrition Criteria

Table 15 shows the descriptive statistics for the TAPAS facets and the criteria in M1 Armor Crewman (19K). Again, raw dimension scores were normed and transformed into standardized scores within each version, so a score of + 1.0 means that an examinee is 1.0 SD above the mean with respect to the norm group. In other words, departures from the mean of zero indicate differences between this group and the Army-wide sample of applicants used for norming. As such, Table 15 suggests that the M1 Armor Crewman (19K) in this sample tended to score lower than the Army-wide norming sample on several TAPAS facets, including Dominance, Achievement, and Order. Table 16 shows the correlation matrix between the TAPAS facets and the four criterion composites examined in this sample.

Table 15. Descriptive Statistics for the TAPAS Facets and Criteria in the Sample of M1 Armor Crewman (MOS 19K)

TAPAS Facets	Sample Size	Normed[a] Mean	Normed[a] Standard Deviation
Achievement	9,747	-.15	.99
Dominance	9,738	-.19	.99
Even Tempered	9,738	.00	1.01
Intellectual Efficiency	9,738	-.17	.95
Non-Delinquency	5,369	.06	.98
Optimism	9,738	-.05	.98
Order	8,853	-.13	.94
Physical Conditioning	9,738	-.04	.97
Selflessness	8,853	-.12	.98
Sociability	8,919	-.06	1.00
Tolerance	8,928	-.03	.98
Criteria			
Can-Do Criterion[b]	2,802	-.14	1.69
Will-Do Criterion[b]	2,727	.00	6.72
12-Month Attrition[b]	18,942	.12	.32
Misconduct Attrition[b]	8,838	.22	.42

[a] TAPAS scores were standardized based on norming samples of approximately 34,000 to 60,000 (depending on the TAPAS version) Army examinees who completed the TAPAS at the MEPS.
[b] The criteria were not normed and, therefore, only the raw scores are reported.

Table 16. Correlations between the TAPAS Facets and the Criteria in the Sample of M1 Armor Crewman (MOS 19K)

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. Achievement	1.00															
2. Dominance	.35	1.00														
3. Even Tempered	.17	.01	1.00													
4. Intellectual Eff.	.31	.31	.14	1.00												
5. Non-Delinquency	.23	-.01	.28	.05	1.00											
6. Optimism	.18	.13	.23	.12	.15	1.00										
7. Order	.24	.12	.06	.13	.14	.05	1.00									
8. Physical Cond.	.27	.21	-.04	.09	.01	.06	.14	1.00								
9. Selflessness	.22	.11	.17	.08	.17	.11	.11	.06	1.00							
10. Sociability	.18	.29	.08	.13	.04	.17	.06	.08	.20	1.00						
11. Tolerance	.13	.04	.18	.14	.08	.09	.03	-.03	.26	.21	1.00					
12. Can-Do Criterion	.03	.02	.03	.07	-.03	.02	-.07	-.05	-.04	-.09	-.03	1.00				
13. Will-Do Criterion	.19	.16	.05	.09	.05	.08	.09	.16	.09	.05	.02	.10	1.00			
14. 12-Month Attrition	-.04	-.03	.02	.02	-.01	-.04	.01	-.11	-.01	.01	.03	-.03	-.06	1.00		
15. Misconduct Attrition	.03	.05	.00	.02	-.01	.01	.00	.04	-.01	.07	.00	-.07	.04	.52	1.00	
16. ASVAB CO AA	.04	.06	.06	.24	-.04	.06	-.18	-.07	-.09	-.14	-.05	.38	.04	-.07	-.08	1.00

Note: Correlations above .04 are statistically significant, *p* < .05. Sample sizes for these correlations ranged from 971 to 9,747. ASVAB CO AA = Armed Services Vocational Aptitude Battery Combat Aptitude Area Composite.

The regression weights for the TAPAS composites predicting the Can-Do, Will-Do, Adaptation, and Conduct criteria in M1 Armor Crewman (19K) are shown in Table 17. As noted previously, the values presented in this table represent the regression weights for the TAPAS facets predicting each criterion. The multiple *R*s for these composites ranged from .18 to .31, and the adjusted *R*s were .19 and .28 for Can-Do and Will-Do, respectively. Consistent with the other MOS examined in this research, these results indicate that the TAPAS composites were moderate predictors of Can-Do, Will-Do, Adaptation, and Conduct criteria.

Consistent with results for Infantry (11B) and Cavalry Scouts (19D), the largest effects were observed for predicting the Will-Do criterion. Again, Physical Conditioning was one of the strongest predictors of both Will-Do and Adaptation. Thus, despite some differences in the composites across MOS, the Physical Conditioning scale appears to be a consistent predictor in each group.

Table 17. Regression Weights for the TAPAS Facets in each Composite for M1 Armor Crewman (MOS 19K)

	Criteria			
TAPAS Facets	**Can-Do**	**Will-Do**	**Adaptation[a]**	**Conduct[a]**
Achievement	.04	.06	**.18**	.07
Dominance	.01	**.20**	.01	-.10
Even Tempered	-.01	.02	.04	-.03
Intellectual Efficiency	**.12**	.03	**-.15**	-.07
Non-delinquency	-.04	.04	-.08	-.08
Optimism	.05	.05	.08	-.12
Order	**-.07**	-.01	**-.11**	-.06
Physical Conditioning	**-.11**	**.12**	**.31**	-.13
Selflessness	**-.09**	.05	**.11**	**.17**
Sociability	**-.11**	**-.10**	-.01	**-.19**
Tolerance	-.04	.01	**-.13**	.09
Multiple R	.23	.31	.20	.18
Adjusted Multiple R	.19	.28	--	--

Note: Samples sizes: Can-Do n = 623; Will-Do n = 710; Adaptation n = 2,392; Conduct n = 1,274. To be consistent with the results for other MOS, all TAPAS scales were included in each composite. Bold values indicate significant regression weights.
[a] The regression weights for the Can-Do and Will-Do criteria are the standardized regression weights. However, due to the dichotomous nature of the attrition outcomes, these analyses were conducted using logistic regression. Therefore, the results presented for these outcomes are the unstandardized regression weights.

Using the composites illustrated in Table 17, we calculated the scores on all four TAPAS composites for each individual in M1 Armor Crewman (19K). Table 18 shows the significant correlations between the TAPAS composites for M1 Armor Crewman (19K) and the criteria measured in this dataset. Again, the TAPAS composites were significantly correlated with several outcomes.

Table 18. Significant Correlations between the Criterion Measures and the TAPAS Composites in the Sample of M1 Armor Crewman (MOS 19K)

	M1 Armor Crewman TAPAS Composites				
Criteria	**TAPAS Can-Do Composite**	**TAPAS Will-Do Composite**	**TAPAS Adaptation Composite**	**TAPAS Conduct Composite**	**ASVAB CO AA Composite**
ASVAB CO AA Composite	.37	.08	-.08		--
Can-Do Criterion Composite	.23		-.08		.38
MOS-Specific Job Knowledge Test	.24		-.12		.34
Army-Wide Job Knowledge Test	.19				.36
Will-Do Criterion Composite	-.04	.31	.16	-.13	.04
APFT Scores	-.09	.23	.15	-.08	
Affective Commitment		.16			
Normative Commitment		.09			.15
Army Career Intentions		.12			-.08
Army Reenlistment Intentions		.15			
Attrition Cognitions		-.20			
Army Life Adjustment		.23	.21	-.12	.05
Needs-Supply Fit		.19			
Training Achievement	-.14	.12	.09	-.07	-.12
Training Failure	-.08	-.14	-.10	.15	-.10
Disciplinary Incidents		-.15	-.17		-.05
12-Month Attrition[a]	.06	-.09	-.15		-.07
Misconduct Attrition[a]				-.15	-.08

Note: Sample sizes for these correlations ranged from 371 to 7,806. [a] Correlations with both 12-month and misconduct attrition are Pearson correlations. Due to the dichotomous attrition variables, these correlations were expected to be lower than the multiple *R*s reported in Table 18, which were based on a logistic regression analyses.

For comparison, quintile plots with the Can-Do and Will-Do criteria as well as 12-month and misconduct attrition are provided in Figure 7 to illustrate the practical importance of these TAPAS composites. As shown here, the TAPAS composites were useful for predicting each of these outcomes. For example, Soldiers scoring in the bottom 20% on the TAPAS Will-Do composite averaged 16 points lower on the Will-Do criterion than those scoring in the highest 20%. This effect was even stronger for the relationship between the TAPAS Can-Do composite and the corresponding criterion. For the TAPAS Adaptation composite, 25% of individuals in the lowest quintile left the Army within 12 months whereas only 9% of individuals in the highest quintile did. Similarly, only 12% of Soldiers with the highest scores on the TAPAS Conduct composite left the Army due to misconduct compared with 29% of Soldiers in the lowest scoring TAPAS group. Based on these results, it appears that a Soldier's personality, as measured by the TAPAS composites developed here, has important implications for performance in M1 Armor Crewman (19K).

Figure 8 illustrates the incremental validity of the TAPAS facets in M1 Armor Crewman (19K). As expected, the TAPAS did not contribute substantially to the prediction of the Can-Do criterion when the CO AA composite was already in the model. In contrast, the TAPAS scales did provide incremental validity for predicting Will-Do, Adaptation, and Conduct criteria. Adding the TAPAS facets to the regression equations for these criteria increased the multiple *R*s by .28, .16, and .15 for the Will-Do, Adaptation, and Conduct composites, respectively. Thus, consistent with our analyses in other MOS, the TAPAS composites provided incremental validity over the AA composite that is currently used for qualification into M1 Armor Crewman (19K).

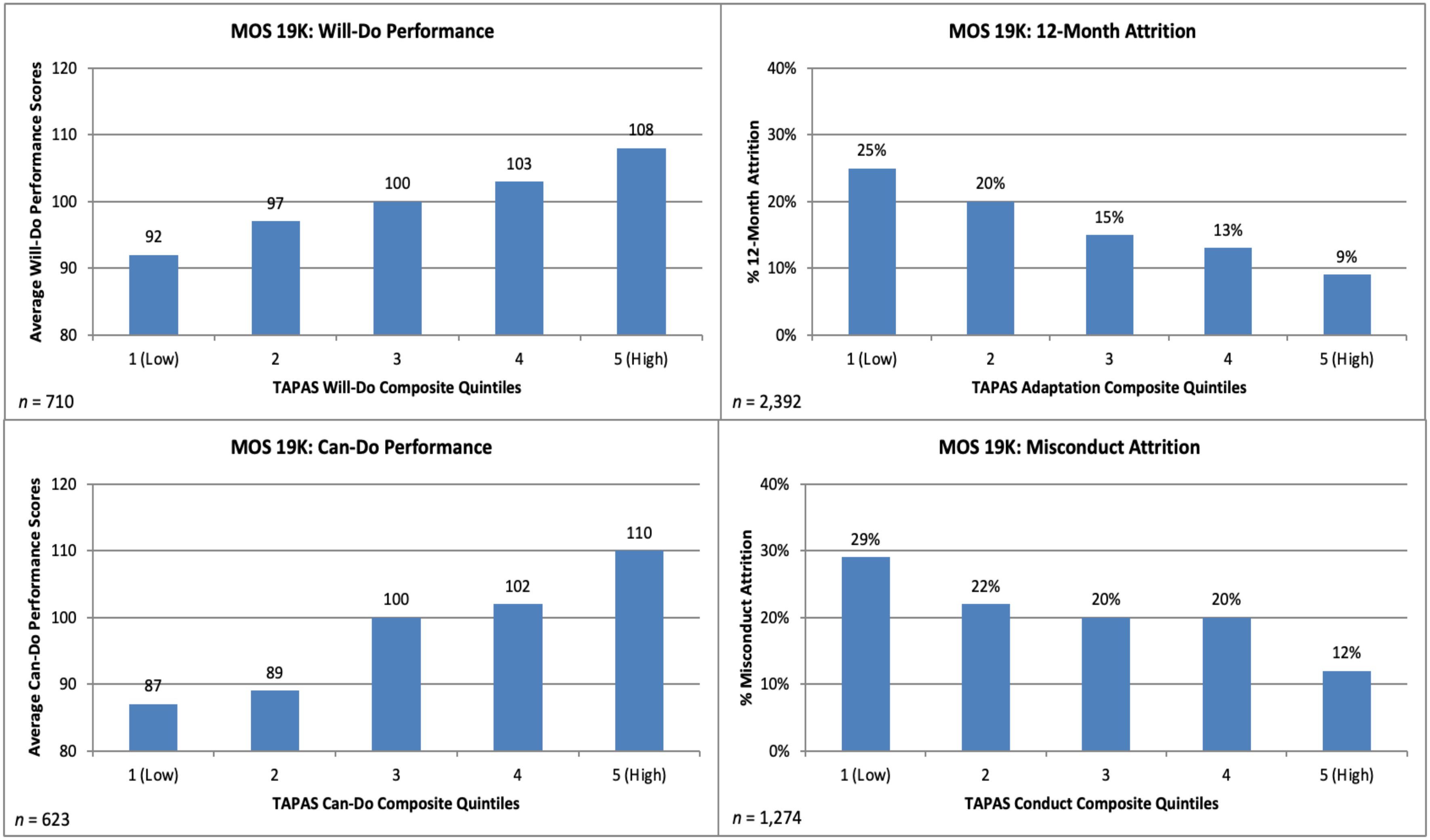

Figure 7. Quintile Plots for the TAPAS Composites in the Sample of M1 Armor Crewman

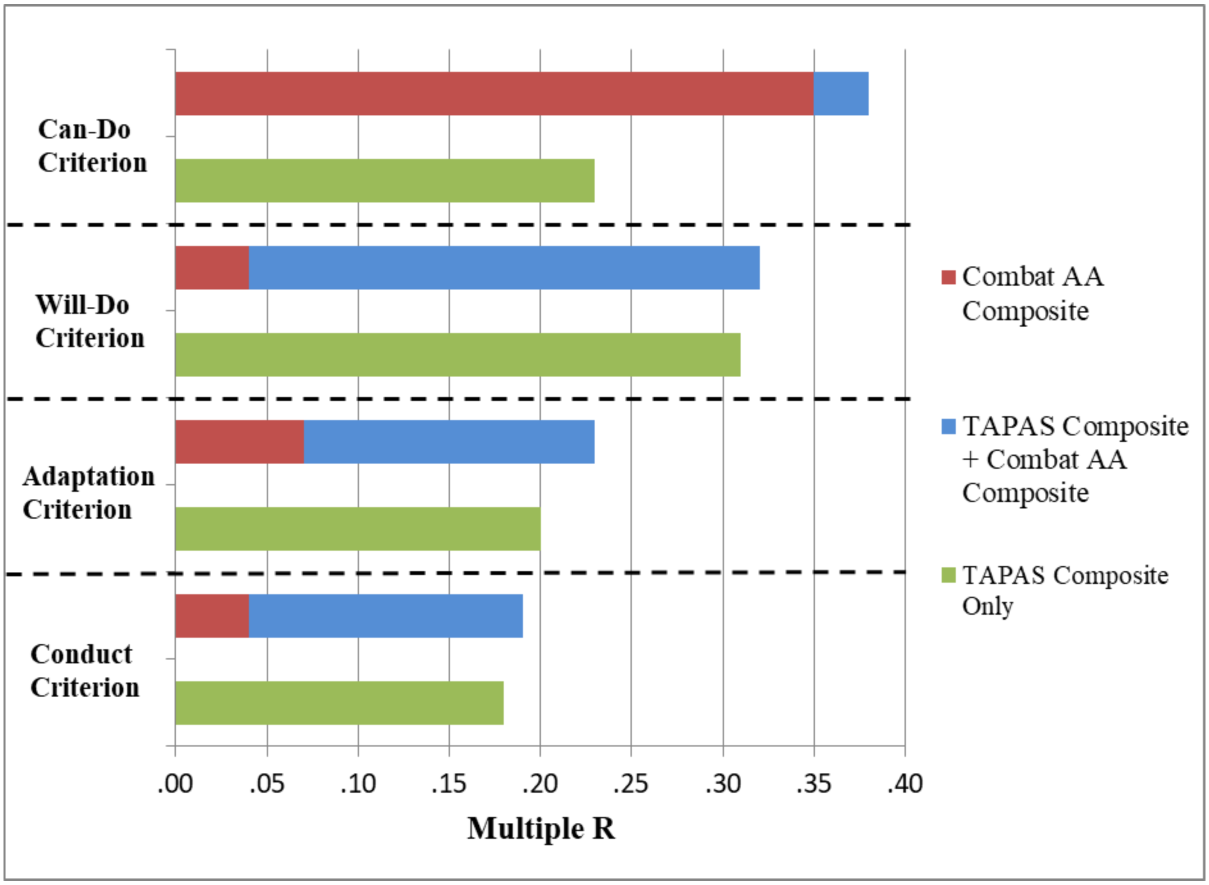

Figure 8. Incremental Validity of the TAPAS Composites over the Combat AA Composite for Predicting Criteria in the Sample of M1 Armor Crewman (MOS 19K)

Next, we conducted analyses to examine if the TAPAS can better identify high performing Soldiers who would not have been predicted to perform well based on their low ASVAB AA scores (at or near the minimum qualification score). To do so, we used the same multiple hurdle approach that was used for the previous MOS but using the MOS-specific composites for M1 Armor Crewman (19K). Specifically, cut scores on the Will-Do, Adaptation, and Conduct composites were selected to screen out the 20% of individuals with the lowest scores on these composites.

Figure 9 illustrates the links between the CO AA composite, the multiple hurdle TAPAS screen for MOS 19K, and the actual criteria in this MOS. Again, the AA composite scores were broken down into quintiles and presented on the X-axes. In addition, the lowest quintile was broken down further into those individuals who passed the TAPAS screen (i.e., top 80%) and those who did not pass (i.e., the bottom 20%). Results are shown for the same four criteria examined in Infantry (11B) and Cavalry Scouts (19D). These plots demonstrate the potential utility of the TAPAS composites for expanding the number of high potential accessions in M1 Armor Crewman (19K).

As shown in Figure 9, using the TAPAS composites in this way can help to identify the applicants with low scores on the AA composite who will perform as well as, or better than, other applicants who scored higher on these cognitive tests. For example, Soldiers in the bottom

20% on the ASVAB CO composite who passed the TAPAS screen (top 80%) had higher scores on the Will-Do criterion, fewer training failures, and engaged in fewer disciplinary incidents than less motivated individuals who did not pass the TAPAS screen. Soldiers with higher TAPAS scores also had lower levels of 12-month attrition, though this difference was negligible. In addition, Soldiers in the bottom quintile on the AA composite with higher TAPAS scores performed as well as or better than individuals who scored higher on the AA composite. Consistent with the other MOS examined in this report, these results demonstrate that the predicted performance scores based on the M1 Armor Crewman (19K) TAPAS composites may be useful for expanding the potential pool of accessions to meet personnel requirements in this MOS. In other words, it appears that high motivation (as indicated by high scores on the TAPAS composites) can compensate, at least partially, for low AA scores.

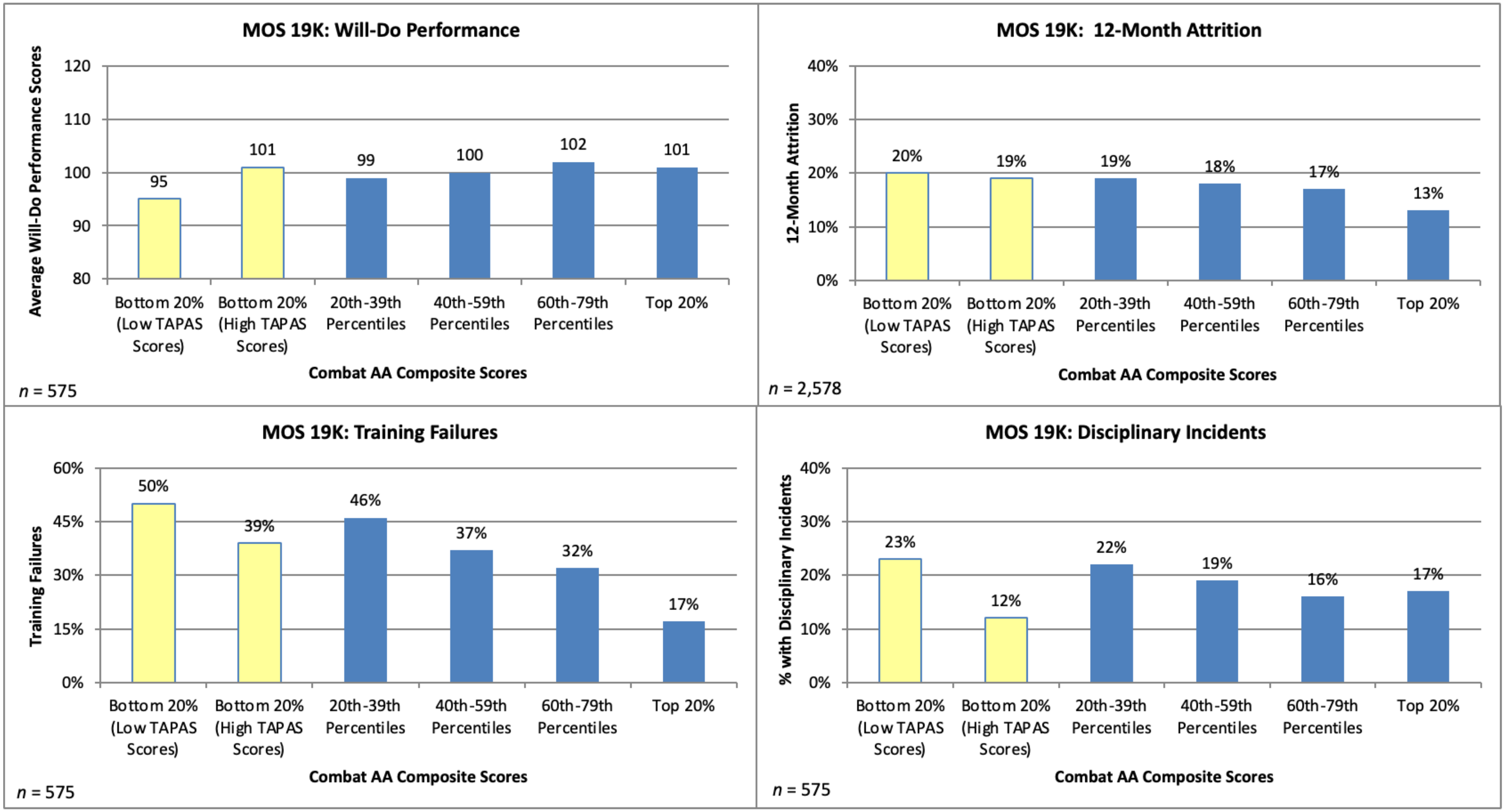

Figure 9. Comparisons using the MOS 19K TAPAS Composites to Supplement the Combat AA Scores for M1 Armor Crewman

47

Predicting In-Unit Criteria

Next, we examined the prediction of in-unit criteria. The sample sizes for these analyses were substantially smaller (n = 126-129) than for the EOT criteria or the other MOS examined in this research. Therefore, a reduced set of analyses were conducted, and these results should be considered preliminary until they are replicated in larger samples. In addition, due to the even smaller sample sizes for the TAPAS Non-Delinquency facet and the deployment satisfaction outcome, these variables were excluded from these analyses.

The results of the analyses of in-unit criteria are shown in Tables 19 and 20. Although the specific predictors of each outcome may vary, the overall results shown in Table 19 are consistent with the results in Infantry (11B) and Cavalry Scouts (19D). Specifically, the multiple *R*s ranged from .19 to .36 suggesting substantial validity for predicting in-unit criteria in M1 Armor Crewman (19K). Again, the adjusted multiple *R*s were smaller for all outcomes due to the large number of predictors and the relatively small sample sizes for these analyses. Therefore, more research is needed to replicate these results in larger samples. Nevertheless, these results provide initial evidence that several TAPAS facets are related to in-unit criteria in this sample of Armored Vehicle Crew. In addition, Table 20 demonstrates that the TAPAS scales provide significant incremental validity for predicting all the in-unit criteria examined here.

The results presented for M1 Armor Crewman (19K) suggest that the TAPAS may also be useful as an MOS qualification tool for this MOS. Individuals who scored high on the TAPAS Can-Do, Will-Do, Adaptation, and Conduct composites had higher levels of Can-Do and Will-Do performance and lower rates of 12-month and misconduct attrition. Consistent with the results for other MOS, these results also indicated that the TAPAS scales could provide incremental validity over the ASVAB CO composite that is currently used to screen candidates for this MOS. Therefore, these TAPAS composites may also be useful for identifying high potential individuals who may not have qualified for M1 Armor Crewman (19K) using ASVAB scores alone. Consequently, a combined composite of ASVAB AA and TAPAS scores would do a better job of identifying applicants who are a good fit for M1 Armor Crewman (19K) and screening out applicants with undesirable characteristics. However, again, these results need to be replicated with larger sample sizes to provide more stable estimates of the utility of the TAPAS for predicting performance in this MOS.

Table 19. Standardized Regression Weights for Predicting In-Unit Criteria in the Sample of M1 Armor Crewman (MOS 19K)

	Criteria													
TAPAS Facets	**MOS Fit**	**Aff. Com.**	**Car. Int.**	**Reenl. Int.**	**Res.**	**OCB**	**CWB**	**MTL SN**	**MTL Aff.**	**MTL Non.**	**Obj. Perf.**	**Disc.**	**APFT**	**Will-Do**
Achievement	-.02	.05	-.03	-.07	.02	.04	-.06	-.17	-.06	-.04	**-.14**	-.08	-.03	.01
Dominance	-.12	**-.22**	-.15	-.23	-.13	-.10	-.05	.07	.17	-.11	.10	.07	.07	-.10
Even Tempered	**.12**	.09	-.06	-.11	-.10	-.06	-.06	-.01	-.03	-.10	-.04	-.02	-.05	.01
Intellectual Efficiency	-.04	.02	.06	.01	**.18**	.09	.06	.05	.13	.02	-.03	.07	-.09	-.03
Non-delinquency	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Optimism	-.01	.08	.15	.18	.06	.08	-.01	.10	-.04	-.02	.06	.00	.08	.09
Order	-.03	.07	-.02	.04	.07	-.03	-.06	-.03	.02	-.09	-.05	.05	.11	.05
Physical Conditioning	.06	-.13	-.03	.04	**.24**	.17	.02	.11	.09	.00	**.16**	**-.17**	**.24**	**.17**
Selflessness	-.09	-.01	.01	.03	-.03	.00	-.12	.06	-.06	.02	-.10	.04	-.04	-.05
Sociability	-.05	-.08	.00	.05	.08	-.09	.07	-.03	.09	-.03	.09	-.02	.01	-.02
Tolerance	-.03	-.02	.01	-.01	.07	.16	-.01	.02	.02	-.04	.02	-.02	-.01	.03
Multiple R	.22	.30	.21	.29	.36	.27	.19	.20	.29	.21	.25	.19	.30	.20
Adjusted Multiple R	.00	.09	.00	.05	.23	.00	.00	.00	.05	.00	.08	.00	.19	.00

Note: Sample sizes for these analyses ranged from 126 to 129. Variables with sample sizes below 100 (e.g., Non-Delinquency, Deployment Satisfaction) were excluded from these analyses. Bold values are statistically significant, p < .10.
Aff. Com. = Affective Commitment; Car. Int. = Career Intentions; Reenl. Int. = Reenlistment Intentions; Res. = Resilience; OCB = Organizational Citizenship Behavior; CWB = Counterproductive Work Behavior; MTL SN = Motivation to Lead-Social Normative; MTL Aff. = Motivation to Lead-Affective; MTL Non. = Motivation to Lead-Noncalculative; Obj. Perf. = Objective Performance; Disc. = Disciplinary Incidents.

Table 20. Incremental Validity for Predicting In-Unit Criteria in the Sample of M1 Armor Crewman (MOS 19K)

	Criteria													
Facets	**MOS Fit**	**Aff. Com.**	**Car. Int.**	**Reenl. Int.**	**Res.**	**OCB**	**CWB**	**MTL SN**	**MTL Aff.**	**MTL Non.**	**Obj. Perf.**	**Disc.**	**APFT**	**Will-Do**
ASVAB AA-Combat	.00	.00	-.06	-.08	.06	**.28**	.04	**.23**	**.20**	**-.23**	.06	-.03	-.05	.09
Multiple R	.08	.02	.00	.03	.10	.28	.06	.22	.15	.13	.07	.06	.06	.10
Achievement	-.03	.05	-.03	-.07	.03	.08	-.05	-.14	-.03	-.08	**-.21**	-.01	-.06	-.01
Dominance	**-.21**	**-.22**	-.16	**-.25**	-.12	-.05	-.05	.10	**.20**	-.15	.11	.03	.04	-.10
Even Tempered	.11	.09	-.07	-.12	-.09	-.06	-.07	-.01	-.03	-.09	-.08	.06	-.14	-.05
Intellectual Efficiency	-.01	.02	.05	.01	.16	.02	.03	-.01	.08	.09	.02	.17	-.08	-.07
Non-delinquency	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Optimism	-.01	.08	.16	.19	.06	.05	.00	.08	-.06	.00	.01	-.05	.17	.12
Order	-.01	.07	-.04	.02	.09	.05	-.05	.04	.08	-.15	-.02	.06	.16	.08
Physical Conditioning	.08	-.13	-.01	.06	**.23**	.10	.01	.06	.04	.05	.17	**-.23**	**.24**	.18
Selflessness	-.15	.00	.02	.04	-.03	.00	-.11	.06	-.07	.01	.08	-.02	.00	-.02
Sociability	-.04	-.07	.01	.05	.09	-.04	.08	.01	.12	-.07	.12	-.04	.00	.02
Tolerance	-.09	-.02	-.01	-.03	.07	**.16**	-.02	.02	.02	-.03	-.04	.06	.02	.01
Multiple R	.33	.30	.22	.31	.37	.37	.19	.28	.34	.29	.29	.27	.36	.26
Adjusted Multiple R	.14	.00	.00	.08	.22	.22	.00	.00	.16	.00	.00	.00	.20	.00

Note: Sample sizes for these analyses ranged from 220 (Deployment Satisfaction) to 496 (most other outcomes). Bold values are statistically significant, $p < .10$. The regression weights for both the AA scores and the TAPAS facets are the weights from the combined regression model.
Aff. Com. = Affective Commitment; Car. Int. = Career Intentions; Reenl. Int. = Reenlistment Intentions; Res. = Resilience; OCB = Organizational Citizenship Behavior; CWB = Counterproductive Work Behavior; MTL SN = Motivation to Lead-Social Normative; MTL Aff. = Motivation to Lead-Affective; MTL Non. = Motivation to Lead-Noncalculative; Obj. Perf. = Objective Performance; Disc. = Disciplinary Incidents.

MOS CLASSIFICATION IN CLOSE COMBAT JOBS

Comparisons across MOS

A primary objective of this research was to expand previous research and examine ways of improving MOS qualification in close combat MOS. The results reported above suggest that TAPAS may be useful for this purpose and can potentially improve the validity of the current qualification procedures for these MOS. In this section, we further explore the potential for using TAPAS as a classification tool. A necessary, but not sufficient, condition for TAPAS to be used for MOS classification is that it predicts important aspects of performance in each MOS. Again, the results presented above indicate that this is the case. In this section, we summarize findings from analyses assessing the usefulness of TAPAS for differential classification. Note that a selection tool is not useful for classification if it provides essentially the same rank-order of individuals across all jobs. In this case, it might be useful for selection into the Army but, with no differences in predicted performance across jobs, no benefit would be obtained for classification. Thus, we next explored the degree to which the MOS-specific TAPAS composites identified Soldiers who might perform better in a different MOS than the one to which they are assigned.

TAPAS Will-Do Composites

The findings presented above for each MOS indicate that several TAPAS facets were significantly related to Will-Do outcomes in all MOS. Using the weights reported above for each MOS, scores on the MOS-specific TAPAS Will-Do composites were calculated for each individual in the total sample. Due to the larger sample sizes, we focused on the EOT criteria for these analyses. Table 21 shows the correlations among these scores. As shown here, the Will-Do composites were highly correlated. Thus, the rank-order of individuals based on these scores will be similar.

Table 21. Correlations between the TAPAS Will-Do Composites in the Total Sample

MOS	11B	19D	19K
11B	1.00		
19D	.88	1.00	
19K	.88	.80	1.00

Note. All correlations reported here were significant at the .05 level.

TAPAS Can-Do Composites

The MOS-specific regression weights were also used to calculate scores on the TAPAS Can-Do composite for each individual in the total sample and the correlations between these scores are shown in Table 22. For the Can-Do composites, the scores were strongly correlated for Infantry (11B) and Cavalry Scouts (19D). Thus, it appears that the predictors of the Can-Do criterion are somewhat similar in these MOS. However, the composite scores for M1 Armor Crewman (19K) were less correlated with the other MOS. This indicates that the TAPAS composites may be able to differentiate performance for M1 Armor Crewman (19K). However, these results are likely due to the relatively small sample size in this MOS and the sampling error that results. Therefore, these results should be viewed as preliminary and future research should examine this issue further.

Table 22. Correlations between the TAPAS Can-Do Composites in the Total Sample

MOS	11B	19D	19K
11B	1.00		
19D	.81	1.00	
19K	.72	.60	1.00

Note. All correlations reported here were significant at the .05 level.

TAPAS Adaptation Composites

The correlations between the TAPAS Adaptation composites are shown in Table 23 and were largely similar to the results for the Can-Do composite. Although the Adaptation composites were highly correlated (.92) in Infantry (11B) and Cavalry Scouts (19D), the correlations were much lower with the composites for M1 Armor Crewman (19K). The correlations with M1 Armor Crewman (19K) were .82 and .76 with Infantry (11B) and Cavalry Scouts (19D), respectively. Although these correlations are still relatively strong, they are consistent with previous research examining MOS-specific TAPAS composites that also showed substantial classification potential (Nye et al., 2020). In other words, despite strong correlations between these composites, the Adaptation composites may still be useful for MOS classification. Nevertheless, the composites for M1 Armor Crewman (19K) are still based on relatively small sample sizes and, therefore, need to be replicated in future research with larger samples.

Table 23. Correlations between the TAPAS Adaptation Composites in the Total Sample

MOS	11B	19D	19K
11B	1.00		
19D	.92	1.00	
19K	.82	.76	1.00

Note. All correlations reported here were significant at the .05 level.

TAPAS Conduct Composites

The correlations between the TAPAS Conduct composites are shown in Table 24. As with the other composites, the correlation between the MOS-specific composites for Infantry (11B) and Cavalry Scouts (19D) were very highly correlated, suggesting little differences between these composites. However, the Conduct composite for M1 Armor Crewman (19K) was again less highly correlated with the other two MOS. Combined with the results for the three other composites, these results suggest that the predictors of performance in Infantry (11B) and Cavalry Scouts (19D) are more similar than for M1 Armor Crewman (19K). Therefore, these results may have implications for classification into these three MOS. We examine this in more detail below.

Table 24. Correlations between the TAPAS Conduct Composites in the Total Sample

MOS	11B	19D	19K
11B	1.00		
19D	.97	1.00	
19K	.63	.72	1.00

Note. All correlations reported here were significant at the .05 level.

TAPAS Overall Performance Composites

As described above, although many of the TAPAS composites are highly correlated, previous research has shown that they can still have potential utility for classification (Nye et al., 2020). However, given the pattern of results, we would expect these composites to have more classification potential for differentiating high performers in M1 Armor Crewman (19K) than in the other two MOS. Therefore, we next examined the extent to which the TAPAS composites could improve the classification of Soldiers into MOS. To answer this question, we used the composites described above to predict performance in Infantry (11B), Cavalry Scouts (19D), and M1 Armor Crewman (19K). We then compared predicted performance scores in the Soldier's current MOS to his or her performance potential in the other two MOS. Importantly, we did not examine the ASVAB scores for these analyses because all three MOS use the same ASVAB AA composite (i.e., Combat) and, therefore, these composite scores are not able to differentiate between individuals who may perform better in one of these MOS than in the other two. Thus, these analyses only focus on the TAPAS composites which do show slight variation across the close combat MOS.

First, the MOS-specific regression weights presented above were used to calculate scores on the TAPAS Can-Do, Will-Do, Adaptation, and Conduct composites for each individual and for each MOS. In other words, every Soldier had four TAPAS composite scores for each of the three MOS we examined here (i.e., 12 total). Then, the scores from the MOS-specific TAPAS Can-Do, Will-Do, Adaptation, and Conduct composites were standardized and summed (i.e., using unit weights for each composite) to get an overall MOS performance potential score that can be compared across Infantry (11B), Cavalry Scouts (19D), and M1 Armor Crewman (19K). The correlations between these overall TAPAS scores are provided in Table 25. We then compared an individual's performance potential for each MOS to the performance potential for his or her current MOS.

Table 25. Correlations between the TAPAS Overall Performance Composites in the Total Sample

MOS	11B	19D	19K
11B	1.00		
19D	.88	1.00	
19K	.80	.74	1.00

Note. All correlations reported here were significant at the .05 level.

Table 26 shows the percentages of Soldiers who, based on their TAPAS scores, had their highest potential in a different MOS (columns) than their current MOS (rows). In other words, the percentages shown in this table illustrate the percent of individuals in each MOS with their highest potential for performance in one of the other two MOS. Because some score differences will be too small to have any practical importance, we only report these percentages for Soldiers whose predicted future performance based on their TAPAS scores was at least half a standard deviation larger in another MOS than in their current MOS. The standard deviations for these composites ranged from approximately 1.81 to 2.26.

The results indicate that many Soldiers were likely to have performed better in a different close combat MOS than in their current job. For example, the TAPAS data indicate that 19% of individuals in Infantry (11B) would have performed at a much higher level (at least half a standard deviation higher) as M1 Armor Crewman (19K). Across all MOS, the results indicated that 29% of Soldiers in Infantry (11B) would have performed at least half a standard deviation higher in one of the other two MOS; 6% would have performed more than one standard deviation higher. In contrast, 38% of individuals in M1 Armor Crewman (19K) would have performed at least half a standard deviation better in one of the other MOS and 17% were predicted to perform a full standard deviation better. These larger percentages for M1 Armor Crewman (19K) were due to the lower correlations between the TAPAS composites for this group and the composites estimated for the other MOS. In other words, the TAPAS composites for M1 Armor Crewman (19K) showed greater differential validity when compared with the other MOS and this resulted in greater differences in predicted performance for this group as well.

Table 26. Percentages of Soldiers with their Highest Potential in an MOS other than their Current MOS

	Alternative Possible MOS						Total % with their Highest Potential in Another MOS	
	11B		19D		19K			
Current MOS	.50 SD	1 SD	.50 SD	1 SD	.50 SD	1 SD	.50 SD	1 SD
11B	N/A	N/A	15	2	19	5	29	6
19D	18	4	N/A	N/A	22	7	33	9
19K	27	11	27	12	N/A	N/A	38	17

Note: Potential is indicated by the overall TAPAS scores.

Overall, it is clear that a number of individuals were predicted to perform better in a different MOS than the one in which they were currently serving. In Table 26, 29% to 38% of Soldiers in a particular MOS would have been classified into a different MOS using the TAPAS composites. In addition, around 6% to 17% of the total sample in an MOS were predicted to perform one full standard deviation better in another MOS. Given the validity results reported above, these results appear to have important potential implications for Soldiers' performance in their MOS.

It should be noted that the approach used here to examine classification was necessarily simplified and did not consider other factors in the classification process such as Soldier preference, the personnel needs of each MOS, or the availability of training seats in each MOS. These factors affect the accuracy of the current classification process and, therefore, would also mitigate the impact of using TAPAS for MOS classification. Nevertheless, the results presented here illustrate the potential gains in performance that could be obtained by using the TAPAS.

It is surprising that more than 29% of the Soldiers were predicted to perform substantially better (at least half a standard deviation) in another MOS when the overall TAPAS performance composites were so highly correlated across the MOS. In part, this is due to the relative dissimilarity of the MOS-specific composites for M1 Armor Crewman (19K). However, these analyses also provide a limited perspective on the classification potential of these composites given that only three MOS, two of which were highly correlated, were examined. In addition, due to the available data, only a limited number of TAPAS facets were examined within each MOS. It is possible that including more facets would have resulted in a greater number of opportunities to differentiate performance in each MOS. Therefore, these results, while promising, provide only an initial view of the classification potential of the TAPAS. To support operational applications, more research is needed to examine the TAPAS for MOS classification.

SUMMARY AND CONCLUSIONS

The TAPAS was designed to address the limitations of traditional personality assessments. As such, it is expected to have validity for predicting important military outcomes, even in high-stakes testing situations. The TAPAS has now been administered to approximately two million applicants testing at MEPS locations. As a result, several studies have demonstrated the validity of the TAPAS for predicting a broad range of outcomes in the military. The bulk of the effort to this point has focused on validating the TAPAS as a selection tool and the results appear promising.

Given the growing literature on the validity of the TAPAS, the primary objective of this effort was to update and expand previous research on the effectiveness of the TAPAS as a tool for MOS qualification. Specifically, the goal of the present research was to examine the validity of MOS-specific TAPAS composites for identifying high potential Soldiers in close combat occupations including Infantry (11B), Cavalry Scouts (19D), and M1 Armor Crewman (19K). This research provides an expanded look at whether the TAPAS can be used to predict performance and classify recruits into these MOS. To be useful for these purposes, the TAPAS facets need to be valid predictors of Army criteria and must be able to predict that some individuals will be high performers in one or more MOS *but not in others*. Using the VAST data, we examined these issues in the Infantry (11B), Cavalry Scout (19D), and M1 Armor Crewman (19K) MOS.

In sum, TAPAS scores were useful predictors of Can-Do, Will-Do, Adaptation, and Conduct outcomes. The MOS-specific TAPAS composites were correlated with several important attitudes and behaviors on the job, including 12-month and misconduct attrition. In addition, results showed that the TAPAS facets could add incremental validity to the prediction of these outcomes even after controlling for the ASVAB CO AA composite. Moreover, results indicated that the MOS-specific TAPAS composites could be useful for identifying high potential individuals who may not have qualified for these MOS using their ASVAB AA scores alone. Individuals who scored in the bottom quintile on the CO AA composite but scored high on an overall TAPAS composite tended to perform as well as or better than other individuals with higher scores on the AA composite. These results suggest that the TAPAS may be useful for expanding the potential pool of accessions to meet personnel requirements in these MOS. In addition, it appears that high motivation (as indicated by high scores on the TAPAS composites) can compensate, at least partially, for low AA scores.

Perhaps the most important finding of this research was that approximately 29% to 38% of the Soldiers were predicted to perform better in a close combat MOS other than the one to which they were assigned. In addition, these results were obtained by examining only three MOS and the limited number of TAPAS facets that were available for these analyses. Nevertheless, these analyses assumed that Soldiers would be classified into the MOS for which they had the highest potential for performance and, therefore, did not account for the practical limitations that are inherent in the classification process. Therefore, these results should be viewed as preliminary and more work is needed to examine the potential utility of the TAPAS under real-world classification conditions. Despite this limitation, this preliminary evidence indicates that using the TAPAS composites for classification into close combat jobs has the potential to improve performance, lower attrition, and improve the overall fit of Soldiers in their MOS.

Another limitation of the current research was the relatively small sample sizes for the Cavalry Scout (19D) and M1 Armor Crewman (19K) MOS. These small sample sizes limited the potential conclusions that can be drawn from this research. A related issue is that more in-depth analyses were conducted with EOT criteria. Again, this was due to the relatively small sample sizes available for in-unit criteria. Given the limited sample sizes for these analyses, research with larger samples from these MOS is needed to provide more stable results and better estimates of the generalizability of these findings. Each of these limitations will be addressed in subsequent planned research with these MOS. Specifically, this research will involve collecting new data from Soldiers in Cavalry Scouts (19D) and M1 Armor Crewman (19K) to increase the sample size for the analyses of in-unit criteria. This additional data will help to improve the accuracy of the results for these MOS and the conclusions that can be drawn from them.

Finally, to provide further support for the use of the TAPAS for MOS qualification, future research should also examine the differential validity of the TAPAS facets across a broader range of MOS. The results presented here suggest that the TAPAS can differentiate between three close combat MOS. In addition, previous research has found similar results when comparing Infantry (11B) to several other non-combat MOS (Nye et al., 2012). Combined, this research demonstrates that using the TAPAS for MOS qualification could help to improve classification efficiency and potentially provide substantial improvements in Soldiers' performance. Nevertheless, the existing evidence is based on only a subset of MOS with large enough sample sizes for comparison. Therefore, a more comprehensive research project examining prediction across a broader range of MOS is necessary. This would allow comparisons of both combat and non-combat MOS and illustrate the potential utility of the TAPAS for identifying individuals who might be more successful in combat occupations than non-combat occupations and vice versa.

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