



Research Note 2023-14

**Developing Criterion Measures for Squad Leaders and
Tank Commanders in Close Combat Jobs**

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**United States Army Research Institute
for the Behavioral and Social Sciences**

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**U.S. Army Research Institute
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DEVELOPING CRITERION MEASURES FOR SQUAD LEADERS AND TANK COMMANDERS IN CLOSE COMBAT JOBS

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DEVELOPING CRITERION MEASURES FOR SQUAD LEADERS AND TANK COMMANDERS IN CLOSE COMBAT JOBS

Introduction

Squad leaders play an important role in the U.S. Army. They have a direct influence on the quality of the training their Squad receives as well as the physical, mental, and emotional readiness of Squad members. They also play a critical role in both leading and mentoring members of the Squad. As a result, the quality of the Squad Leaders that are currently serving can, in many ways, determine the overall quality of the U.S. Army and its effectiveness on the battlefield (TC 7-22.7; U.S. Department of the Army, 2020). Given their important role, it is critical to identify individuals who will be successful in these positions.

To identify high-potential individuals for these roles, the goal of the current research was to develop criterion measures that can be used in future studies to validate assessments that may facilitate the selection of Squad Leaders. Criterion-related validity studies are critical for demonstrating the utility of measures that will be used to make high-stakes selection and classification decisions. If the scores on an assessment are intended to predict an individual's potential for success in a particular job, then it is important to demonstrate that these scores predict outcomes that are important to the Army and related to the job. To do so, it is necessary to measure these outcomes effectively. As noted in the *Principles for the Validation and Use of Personnel Selection Procedures* (Society for Industrial and Organizational Psychology, 2018), "if an adequate criterion measure does not exist or cannot be developed, use of a criterion-related validation strategy is not feasible" (p. 10). In other words, to ensure the feasibility of criterion-related validity studies, appropriate criterion measures should be developed if they do not already exist. In the current research, we focused on developing criterion measures that do not currently exist for Squad Leaders: a job knowledge test and a performance measure.

Job Knowledge Tests (JKTs)

To assess job knowledge, the Army established an extensive Skill Qualification Test (SQT) program in the mid 1970's (Nieva et al., 1979). The program was abandoned, however, in the early 1990s when the costs of maintaining and administering it became too burdensome. Because the U.S. Army Research Institute for the Behavioral and Social Sciences (ARI) had been using the SQTs as criterion measures in its selection and classification research, it was necessary to develop alternative measures, such as job knowledge tests, to support continuing research (Knapp & Campbell, 2006). ARI's early work in this area was conducted as part of three projects: Project A (Campbell & Knapp, 2001), a comprehensive research and development program to enhance the Army's personnel selection and classification procedures; the *New Predictors for Selecting and Assigning Future Force Soldiers* project (Select21; Knapp et al., 2005), which sought to ensure the selection of individuals with the knowledge, skills, and attributes needed to perform well in a transformed Army; and the *Army Enlisted Personnel Competency Assessment Program* project (PerformM21; Knapp & Campbell, 2006), which evaluated the feasibility of developing a system for Soldier assessment. Across these projects, ARI produced seven Military Occupational Specialty (MOS)-specific JKTs. These served as prototypes for the development of additional JKTs in the *Future Force Performance Measures*

(Army Class) project (Moriarty et al., 2009), which also documented a methodology for JKT development.

Building on these previous projects, ARI continued to use this methodological framework to produce and/or update eleven MOS-specific JKTs for the *Tier One Performance Screen* (TOPS) project (Bynum & Beatty, 2014; Knapp & Kirkendall, 2020) and its follow-on, the *Validation of Accessions Screening Tools* (VAST; Knapp & Kirkendall, 2020). The TOPS and VAST projects use the JKTs primarily as criteria for the validation of personnel selection tools. At this point, the existing library of JKTs includes tests for a broad range of MOS, including close combat MOS such as Infantry (11B), Cavalry Scouts (19D), and M1 Armor Crewman (19K). Each of these tests, however, was developed to measure the knowledge required for first-term Soldier training and performance. Therefore, JKTs are not currently available to assess the knowledge required for Squad Leaders.

Performance Measures

Another criterion that is frequently used in Army validation research is job performance. The Army has a long and distinguished history related to the measurement of job performance among its Soldiers. In fact, some of the earliest work focused on identifying the key dimensions of performance was conducted in the Army's Project A (Campbell & Knapp, 2001). Prior to this time, there had been very few attempts to model individual job performance as a construct (Campbell & Wiernik, 2015) and several different theoretical models of job performance have been based on the work conducted in Project A (e.g., Campbell et al., 1990; Campbell et al. 1993; Campbell, 2012). These models have played an important role in the research on job performance and influenced subsequent efforts to define the most important aspects of employee behavior (e.g., Borman & Motowidlo, 1993).

Performance measurement in Project A was primarily focused on two major types of job performance: Army-wide (i.e., aspects of performance that are the same across all MOS in the Army) and MOS-specific (i.e., aspects of performance that are unique to a particular MOS or role) performance (Campbell, et al., 1990). Subsequent efforts to measure Soldiers' performance have continued this tradition (Knapp & Kirkendall, 2018; Moriarty et al., 2009). Nevertheless, the focus on job-specific performance measurement suggests a need for separate measures that reflect the unique characteristics of each MOS in the Army. Although specific measures have been developed for a number of MOS, these measures were primarily focused on end-of-training performance and not used for assessing in-unit performance (Knapp & Kirkendall, 2018). In addition, like the JKTs, the existing performance measures were developed to assess the performance of first-term Soldiers and may not reflect the unique tasks and activities performed by Squad Leaders. Therefore, additional research to develop performance measures that are relevant to Squad Leaders in the Army is needed.

Purpose of the Current Research

To accommodate the need for criterion measures that can be used in future validation studies with Squad Leaders, the current research focused on developing new JKTs and performance measures that are tailored to the role of a Squad Leader. For the purposes of the current research, we focused specifically on Squad Leaders (or their equivalent roles) in three

close combat MOS including Infantry (11B), Cavalry Scouts (19D), and M1 Armor Crewman (19K). This effort involved two primary tasks. First, we developed three separate JKTs to assess the knowledge of Squad Leaders or Tank Commanders in these three occupations. Focus groups were conducted with subject matter experts (SMEs) to determine the relevance of existing content from tests for first-term Soldiers and to develop new content assessing the unique knowledge required by Squad Leaders/Tank Commanders.

Next, we also developed a measure of performance that can be used in future validation research with Squad Leaders in Infantry and Cavalry Scouts or Tank Commanders in M1 Armor Crews. To develop these performance rating scales and facilitate future research, we first conducted a survey to explore the key tasks and activities performed by Squad Leaders and Tank Commanders. Next, SMEs were identified from each MOS and focus groups were conducted to review the survey results, examine the relevance of existing scales, and generate critical incidents for creating new performance rating scales for Squad Leaders and Tank Commanders.

DEVELOPING JOB KNOWLEDGE TESTS FOR SQUAD LEADERS AND TANK COMMANDERS

Development Methodology

Development of the JKTs was based on the methods established and documented in the previous ARI research described earlier. In particular, we followed the methodology reported by Moriarty et al. (2009) closely. The process described here includes two steps: (1) create the test blueprints and (2) develop the test items.

Developing the Test Blueprints. The process of developing the test blueprints included both initial development and subject matter expert (SME) review. The blueprints were designed to cover, as completely and efficiently as possible, the full job domain of each of the three jobs (i.e., Infantry Squad Leader, Cavalry Scout Squad Leader, and M1 Armor Tank Commander). The initial tests were designed to include approximately one and a half times the number of items needed to provide a valid test of Soldier knowledge. This meant that the initial test blueprints specified 45-55 items for the assessment. The purpose of developing more items than needed was to provide extra content so that poor quality items could be removed later on without sacrificing the validity of the assessment. The desired number of items for the final forms was 30 to 40.

Consistent with previous JKT development efforts, we used the job requirements described in Soldier Training Publications (STPs) as the knowledge domain for each MOS. The STPs contain the Individual Critical Tasks for each MOS. Critical Tasks are organized into Subject Areas and provide step-by-step procedures to standardize individual training for the Army. Our general approach to developing blueprints was to construct overall knowledge areas based on the STP Subject Areas and then define more specific knowledge requirements in each area based on the Critical Tasks. In addition to STP-based knowledge areas, we also included a single leadership knowledge area in all three blueprints. The test specifications for leadership were based on the Army Leadership Requirements Model, which is detailed in Army Doctrinal Publication (ADP) 6-22 (U.S. Department of the Army, 2019). These specifications were supplemented with leadership-related topics covered in the U.S. Army Maneuver Center of Excellence (MCOE) Maneuver – Advanced Leader Course (M-ALC) program of instruction (POI). Additional sources that informed item development for the JKT, but not blueprint design, included: the Training Circular (TC) 7-22.7, *The Noncommissioned Officer Guide* (U.S. Department of the Army, 2020); Army Techniques Publication (ATP) 6-22.1, *The Counseling Process* (U.S. Department of the Army, 2014); ADP 6-0, *Mission Command* (U.S. Department of the Army, 2019); and three ATPs from which we identified content on troop leading procedures (ATP 3-21.10, *Infantry Rifle Company* [Department of the Army, 2018], ATP 3-20.15, *Tank Platoon* [U.S. Department of the Army, 2019], and ATP 3-20.98, *Scout Platoon* [U.S. Department of the Army, 2019]).

To identify knowledge areas for the test blueprints based on the STP, we focused on the Subject Areas containing Skill Level (SL) 3 tasks, which are specified for the E-6 pay grade. Many of the SL 3 tasks for the targeted MOS are taught at the Armor and Infantry Advanced Leader Courses (ALCs) in the Maneuver Center of Excellence (MCOE) at Fort Moore, GA. Others, particularly tasks tied to equipment and vehicle types that vary by unit, are not trained

until NCOs begin their assignments at specific units. We tentatively included tasks that would be trained differently across units until we could obtain direction from subject matter experts (SMEs).

In addition to STPs, we also relied on Army doctrinal publications (e.g., ATPs, ADPs, and Field Manuals [FMs]) to generate content for the test blueprints. These publications provide the doctrinal framework and techniques for employing specific types of units (e.g., Infantry platoon and squad) in mission-essential collective tasks (i.e., unit-level tasks), which are the basis for the Critical Tasks found in the STPs. In practice, the doctrinal information is provided to guide leader decision making during the performance of Critical Tasks. Job knowledge test questions often require respondents to identify the appropriate doctrinal course of action under a specific set of conditions.

After developing the initial set of test blueprints, SMEs reviewed these blueprints for accuracy. These reviews were completed during a series of virtual video focus groups. Participants in these focus groups included students in the MCOE Maneuver Senior Leader Course (M-SLC). These individuals, which included both Squad Leaders and Tank Commanders, were a knowledgeable source of information on SL 3 performance. For each of the three target MOS, we conducted four 2.5-hour focus group sessions. Four SMEs were invited to attend each session, though actual attendance was lower than requested. In total, we requested 16 SMEs from each of the target MOS for a total of 48 SMEs. Actual SME participation rates were 12 SMEs for Infantry, 9 for Cavalry Scouts, and 15 for Armor.

For each test being developed, the first of the four focus group sessions dealt almost exclusively with reviewing and revising the draft blueprint. Facilitators asked the SMEs to evaluate the content of the draft blueprint for coverage of the job's present knowledge requirements. The SMEs provided their general and specific reactions to the taxonomy of knowledge areas, commented on how well the blueprint covered the required content, and confirmed or adjusted the organization and structure of the blueprint. After adjusting the content of the blueprints during the session, SMEs assisted in weighting the knowledge areas. First, SMEs were asked to weight the knowledge areas, based on their importance and the frequency with which they are performed, to determine the percentage of items to be included in each knowledge area. Second, SMEs were asked to weight the knowledge requirements within each area by ranking the requirements in order of importance. When there were large numbers of knowledge requirements in a particular subject area, SMEs were asked to organize requirements into three categories corresponding to high, medium, and low importance.

Together, the weights provided by the SMEs allowed us to determine the number of items necessary for each knowledge area and requirement. The resulting blueprints, including the weights, were evaluated, confirmed, or adjusted as required by the SMEs in the three subsequent focus groups. During the test development process, item requirements were occasionally modified if a sufficient number of high-quality items could not be developed for a content area.

Item Development. Item development for the JKTs occurred during the aforementioned round of focus groups. In each session, participants were first trained for approximately 10 minutes on the characteristics of high-quality items. The training covered the purpose of the JKTs, specific item types (i.e., multiple choice, multiple response, rank ordering, and matching),

the characteristics of effective test items, and guidelines for developing viable items. The training slides provided to participants are shown in Appendix A.

After the training, participants wrote items for knowledge requirements covered in the blueprints. To increase the number of items produced, SMEs split into two groups, with a facilitator leading each group. To supplement the items written by the focus group participants, additional items were written by four consultant SMEs who were qualified to write items based on their current or prior experience in the targeted positions or MOS. Consultant SMEs included one SME each for both MOS 11B and 19D and two SMEs for MOS 19K. After generating the required items, experienced test developers reviewed all test content and provided recommendations for refining the final set of items.

All items were then reviewed by SMEs in a second round of focus groups, which were also conducted virtually. In the second round of SME focus groups, we requested the assistance of four M-SLC students and four ALC instructors from each of the three MOS. We first conducted one 2.5-hour focus group session with instructors and then conducted an additional focus group with students. Participants included four ALC instructors and four M-SLC students from Infantry (MOS 11B), three instructors and three students from Cavalry Scouts (MOS 19D), and three instructors and four students from M1 Armor Crewman (MOS 19K), for a total of 21 SMEs. The facilitators worked closely with SMEs during the focus groups to refine items and replace items that SMEs identified as problematic. Following these focus groups, the final set of items were edited to conform with the item writing guidelines (e.g., each item stem is a complete expression of the problem, distractor responses are similar in length to the correct response), correct grammar, and improve clarity. The items were then reviewed by the research team. After revising items based on feedback from these reviews, the JKTs for Infantry, Cavalry Scouts, and M1 Armor Crewman consisted of 49, 57, and 56 items, respectively. These totals included MOS-specific items as well as a set of 16 leadership knowledge items that were common across the three tests.

DEVELOPING A MEASURE OF SQUAD LEADER/TANK COMMANDER PERFORMANCE

Next, we focused on developing a measure of performance for Squad Leaders in Infantry and Cavalry Scouts and Tank Commanders in M1 Armor Crews. Although performance rating scales exist for first-term Soldiers in each of these MOS (e.g., Knapp & Kirkendall, 2018), similar measures are not available for Squad Leaders/Tank Commanders. Therefore, this task involved conducting a survey to identify the most important duties of an NCO in these positions and meeting with focus groups to develop and refine a measure of Squad Leader/Tank Commander performance that can be used in future validation research.

Developing Task Lists

The first task in developing a measure of performance for Squad Leaders/Tank Commanders was to identify a list of the most important activities performed in this job. To do so, we began by reviewing existing Army doctrine on leadership and leader development at the rank of Staff Sergeant (SSG) in the close combat MOS. This included Army Doctrine Publication 6-22 on *Army Leadership* (U.S. Department of the Army, 2012), *The Noncommissioned Officer Guide* (TC 7-22.7; U.S. Department of the Army, 2020), and *Maneuver Leader Development Strategy* (MLDS; Maneuver Center of Excellence, 2013). In each of these publications, we identified the various requirements and expectations of SSGs in the Army. Table 1 provides a summary of the broad performance dimensions identified in these materials. Because the goal of this review was to identify the *behaviors* of a high-performing Squad Leader/Tank Commander, our review of these models focused on Army leadership competencies, rather than leader attributes. Table 1 also provides a simplified illustration of the overlap between the broad dimensions identified in our review. However, the relationships between these models are complex in that many of these dimensions may fall under multiple broader categories. This more complex picture is illustrated in Figure 1, which provides a hierarchy of existing Army leadership requirements.

Survey Methodology

Building on the leadership models shown in Table 1 and Figure 1, we next developed a survey that could be administered to SMEs to identify the most important tasks performed by Squad Leaders and Tank Commanders. The items for this survey included sets of duties that were organized into six categories based on the Noncommissioned Officer (NCO) Common Core Competencies (*The Noncommissioned Officer Guide*, TC7-22.7), which include Leadership, Communication, Readiness, Training Management, Program Management, and Operations. The specific duties that were rated by SMEs were taken directly from the general learning outcomes (GLOs) and the maneuver learning outcomes (MLOs) associated with each of these competencies (Maneuver Center of Excellence, 2013). Specifically, each GLO and MLO was reviewed and those that reflected specific aspects of performance were included in the survey to be rated by SMEs. In total, 112 duties were identified from the GLOs and MLOs and included in the survey. This included 30 duties for Leadership, 17 for Communication, 8 for Readiness, 18 for Training Management, 14 for Program Management, and 25 for Operations. For each item in the survey, SMEs were asked to rate “How frequently do Squad Leaders perform these duties?” on a scale from 0 (*Never*) to 5 (*Once per day or more*). In addition, SMEs also rated “How

important is completing each duty to the successful accomplishment of a Squad Leader's job?"
on a scale from 1 (*Not Important*) to 5 (*Extremely Important*).

Table 1. Summary of Army Leadership Models

Army Leadership Requirements Model^a (ADP 6-22)	NCO Common Core Competencies (C³) (The Noncommissioned Officer Guide, TC7-22.7)	21st Century Soldier Competencies (Maneuver Leader Development Strategy, 2013)
Leads: <ul style="list-style-type: none"> • Leads others • Builds trust • Extends influence • Leads by example • Communicates 	Leadership <ul style="list-style-type: none"> • Conducts daily operations, executing complex tactical operations, and making intent-driven decisions. • Includes: Counseling, coaching and mentoring, character development 	Character and Accountability <ul style="list-style-type: none"> • Demonstrates Army values, adheres to the Army ethic, and puts service before self. Teamwork and Collaboration <ul style="list-style-type: none"> • Creates high-performing groups by leading, motivating, and influencing individuals and partners to work towards a common goal.
	Communication <ul style="list-style-type: none"> • A leader must communicate clearly. • Includes: Verbal, written, and digital communications as well as media engagement 	Cultural, Joint, Interagency, Intergovernmental, and Multinational Competence <ul style="list-style-type: none"> • Uses cultural fundamentals, self-awareness, and regional competencies to act effectively in any situation. Is sensitive to social cues and beliefs of individuals and communities. Communication and Engagement <ul style="list-style-type: none"> • Expresses themselves clearly and succinctly in oral, written, and digital communications.
	Develops: <ul style="list-style-type: none"> • Prepares self • Creates a positive environment • Develops others • Stewards the profession 	Readiness <ul style="list-style-type: none"> • Is responsible for Soldier readiness and play a key role in unit readiness • Includes: Inspections, Comprehensive Soldier Fitness, equipment maintenance, and resiliency.

	<p>Training Management</p> <ul style="list-style-type: none"> Plans, prepares, executes, and assesses sustained and effective training. 	<p>Lifelong Learner</p> <ul style="list-style-type: none"> Continually assesses themselves, identifies what they need to learn, and uses skills that help to effectively acquire and update knowledge, skills, and attitudes.
	<p>Program Management</p> <ul style="list-style-type: none"> Assists their officer counterparts in managing Army Programs that help Soldiers and Families 	<p>Comprehensive Fitness</p> <ul style="list-style-type: none"> Supervises a comprehensive fitness program, implements measures to reduce stress, and advises Soldiers on available resources.
<p>Achieves:</p> <ul style="list-style-type: none"> Gets results Integrates tasks, roles, resources, and priorities Improves performance Gives feedback Executes Adapts 	<p>Operations</p> <ul style="list-style-type: none"> Makes decisions that are appropriate to the situation and execute. Includes: Large-scale combat, multi-domain, and joint operations. 	<p>Professional Competence</p> <ul style="list-style-type: none"> Employs tactical and technical skills through the full range of military operations to accomplish the mission and support the commander's intent.
		<p>Adaptability and Initiative</p> <ul style="list-style-type: none"> Comfortable operating in unexpected situations. Scans the environment and adjusts to handle the situation. Recognizes when standard procedures are not an effective solution to a situation and identifies new approaches to handle the situation.
		<p>Critical Thinking and Problem Solving</p> <ul style="list-style-type: none"> Analyzes and evaluates ways to improve thinking. Solves complex problems using experiences, training, education, critical questioning, convergent, critical thinking, and collaboration to develop solutions.

^aAlthough the Leadership Requirement Model (ADP 6-22) also includes several attributes of a leader, these were excluded from this summary because they reflect individual characteristics (i.e., who a leader is) rather than behaviors (i.e., what a leader does). To develop a measure of performance, our review was primarily focused on identifying important leadership behaviors.

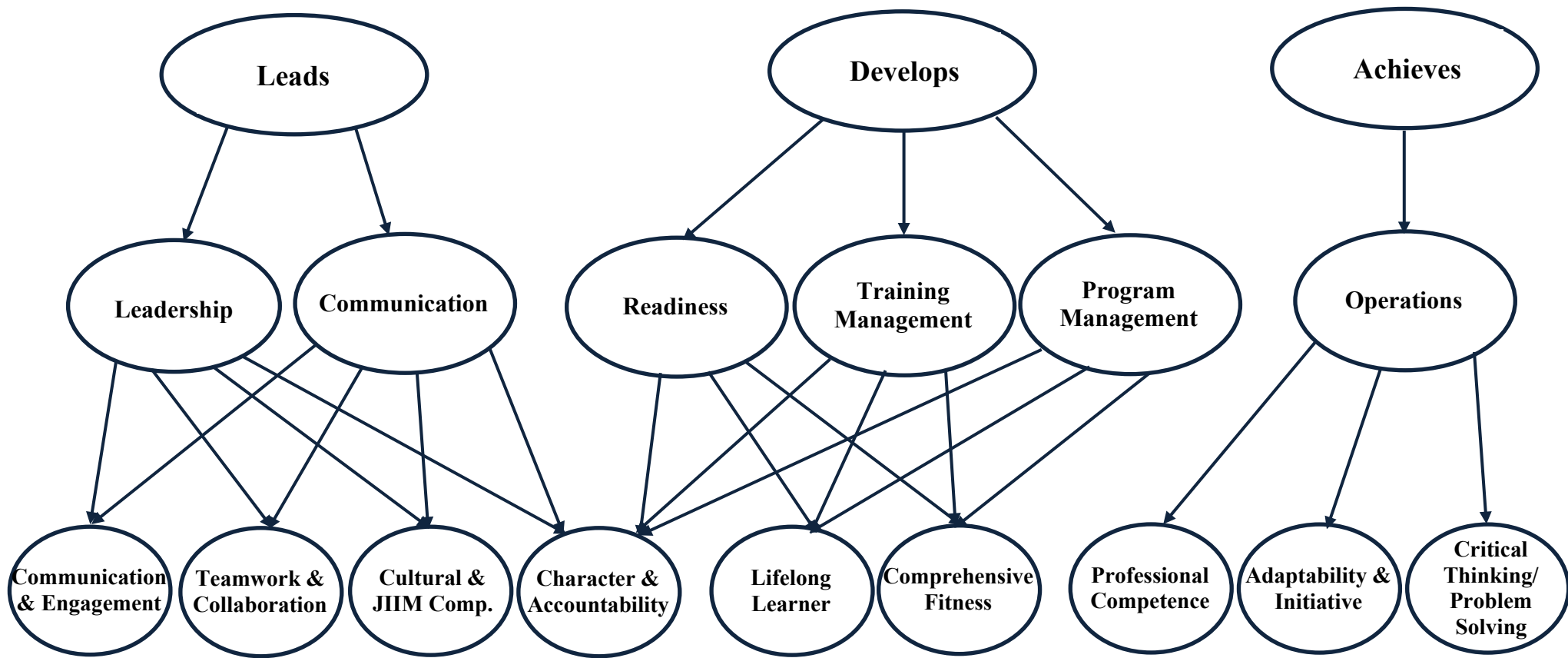


Figure 1. Hierarchy and Linkages between the Army Leadership Models

Survey Results

The survey was administered to a group of 67 Soldiers who served as SMEs. The majority of these Soldiers were Squad Leaders (79%) and were in either Infantry (11B; 63%) or Cavalry Scout (19D; 27%) MOS. The results of the frequency and importance ratings are summarized below. In Figure 2, the average ratings are reported for the ten most and least important Squad Leader duties across all of the activities rated by SMEs. Next, the subsequent figures report the five most and least important duties for each of the NCO common core competencies (see Table 1 for a list of these competencies). Finally, the full set of ratings for all the duties rated by the SMEs are reported in Appendix B.

As shown in Figure 2, the top 10 most important activities performed by Squad Leaders, as rated by the SMEs, were associated with several of the core competencies examined in this survey. However, the duties associated with Program Management were disproportionately rated as the *least* important duties. In other words, many of the duties rated among the top 10 least important by the SMEs were associated with Program Management. Nevertheless, even the duties that were rated as least important by the SMEs were still considered “*Important*,” as indicated by average importance ratings of 3 or more.

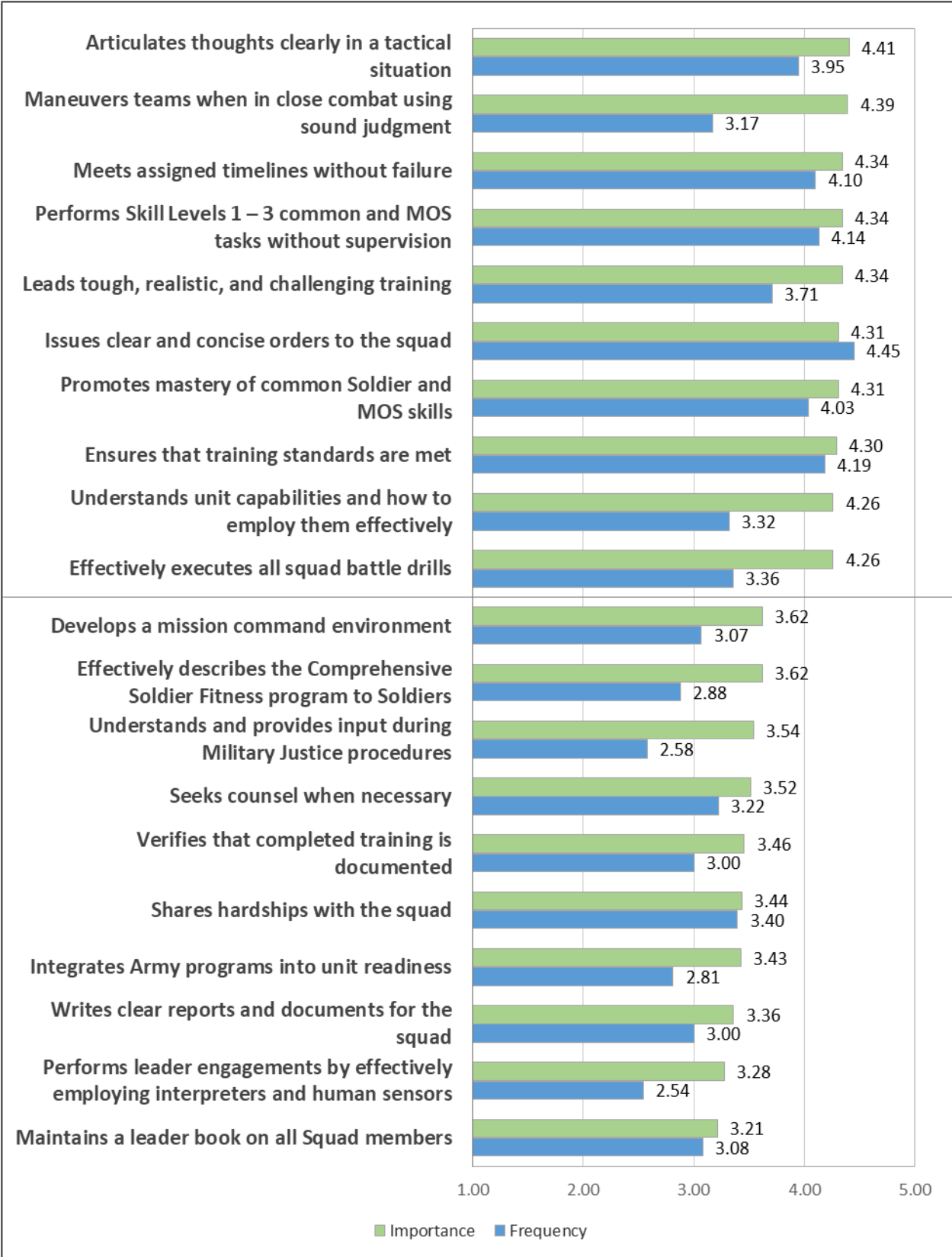


Figure 2. Average Ratings for the Ten Most and Least Important Squad Leader Duties across all Core Competencies

Figures 3-8 illustrate the activities rated as the most important by the SMEs for each of the NCO common core competencies. Many of the most important duties in Figures 3-8 were rated as “*Very Important*,” as indicated by average importance ratings above 4. Although some duties were rated as less important than others, even the duties that were rated the lowest were still considered “*Important*” by the SMEs, as indicated by average importance ratings of 3 or above. In addition, many of the most important duties were performed “*Several times per week*,” as indicated by average frequency ratings near 4. The frequency ratings of the Leadership duties were higher than the importance ratings for several of these duties. Participants reported performing the Program Management duties in Figure 7 infrequently when compared with many of the other duties rated in this survey. In contrast, many of the Operations duties in Figure 8 were rated as important even though they were not performed frequently.

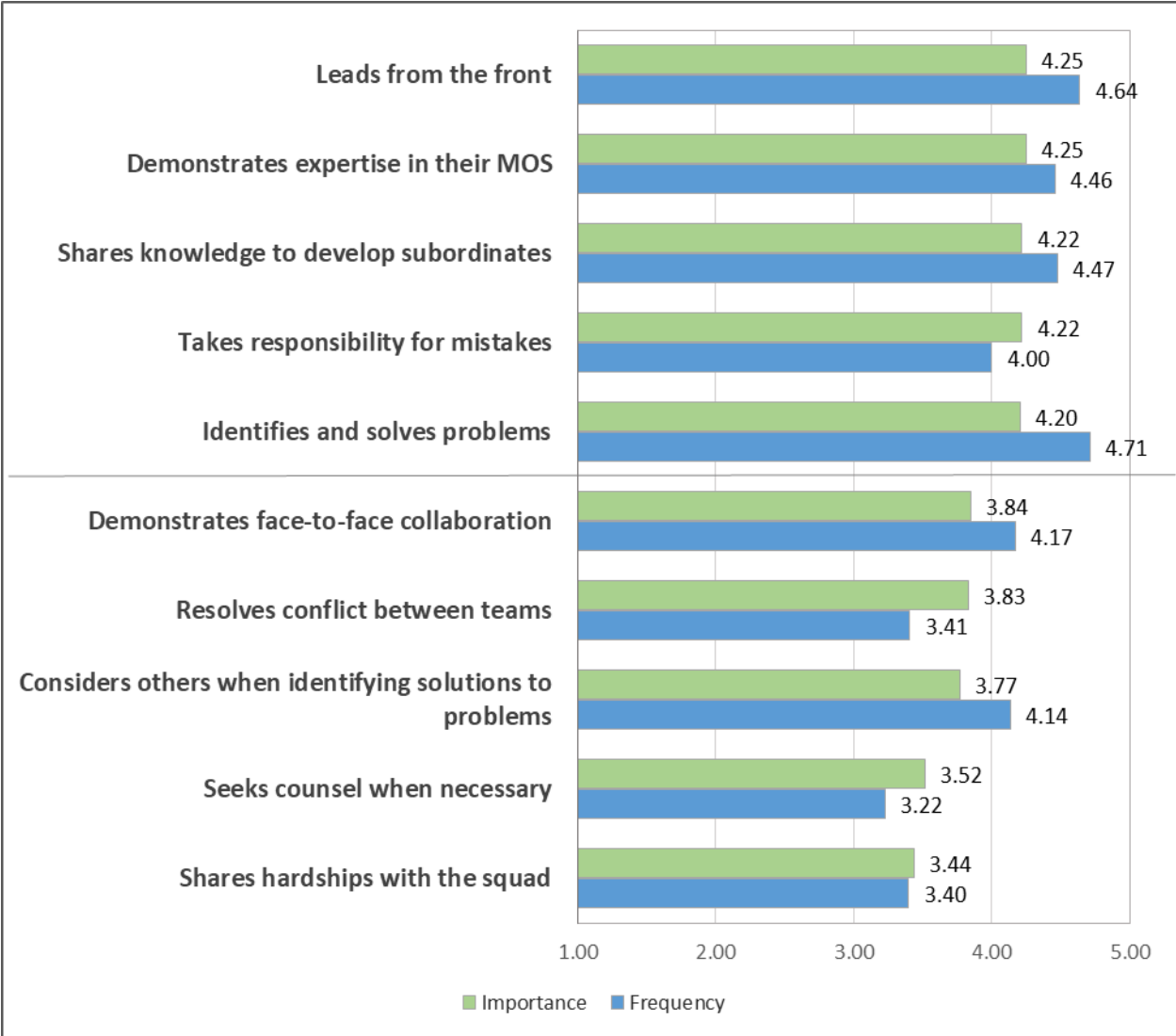


Figure 3. Average Ratings for the Five Most and Least Important *Leadership* Duties as Rated by SMEs

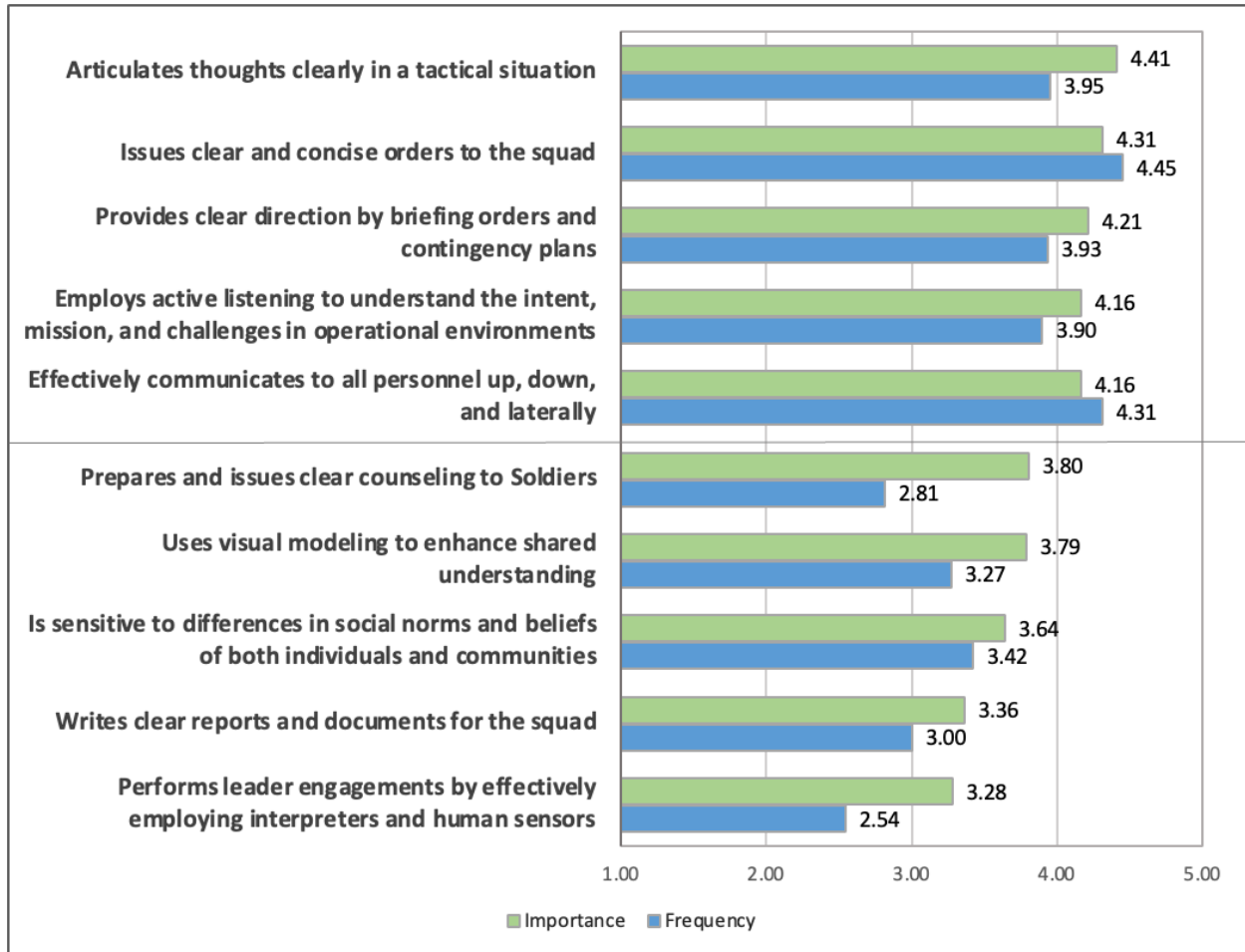


Figure 4. Average Ratings for the Five Most and Least Important *Communication* Duties as Rated by SMEs

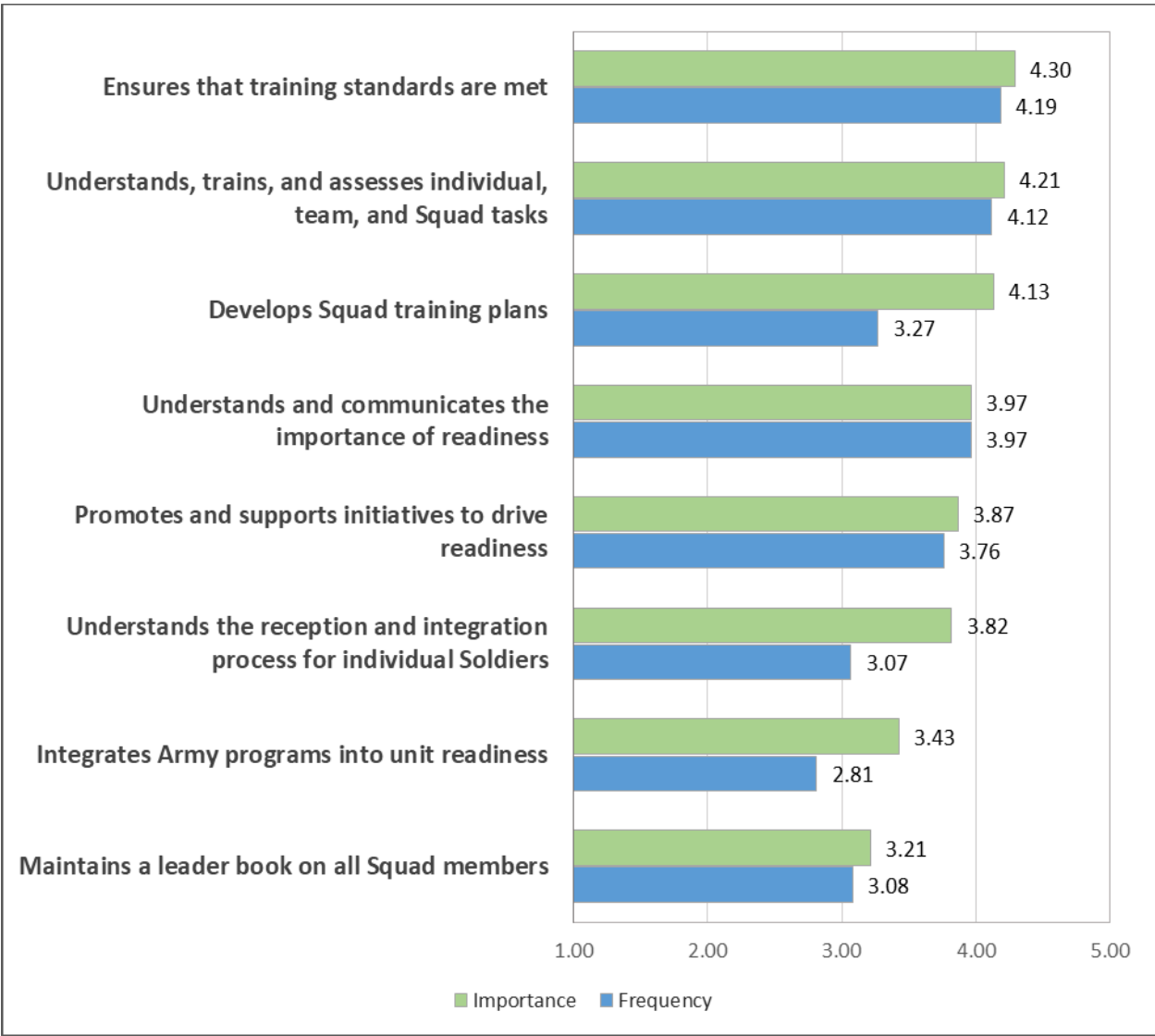


Figure 5. Average Ratings for the *Readiness* Duties Ordered from Most to Least Important as Rated by SMEs



Figure 6. Average Ratings for the Five Most and Least Important *Training Management* Duties as Rated by SMEs

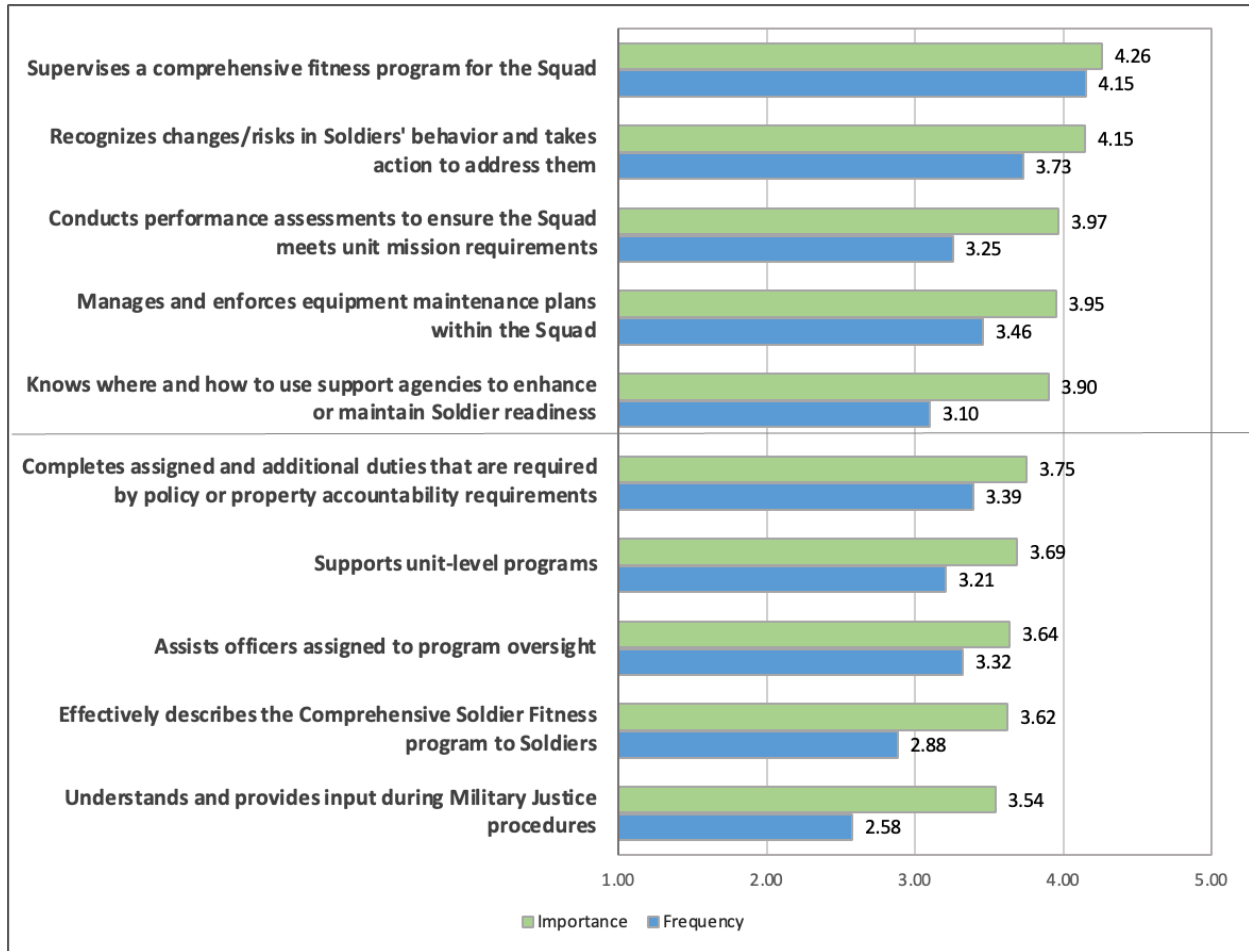


Figure 7. Average Ratings for the Five Most and Least Important *Program Management* Duties as Rated by SMEs

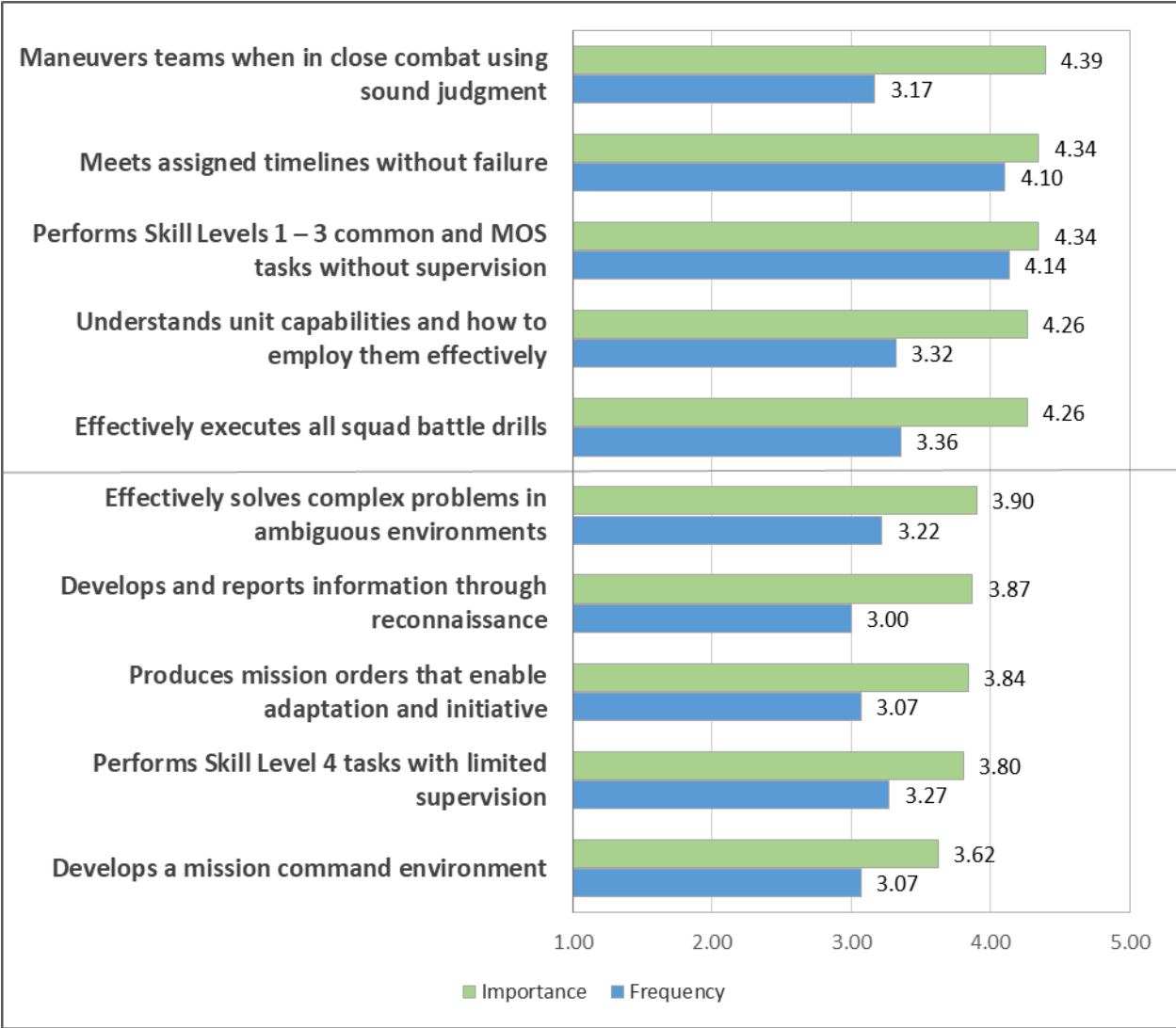


Figure 8. Average Ratings for the Five Most and Least Important *Operations* Duties as Rated by SMEs

Focus Groups

Although the survey results provide some initial information about the relative importance of the duties performed by Squad Leaders, they may still provide an incomplete picture of performance in this role. Therefore, to further evaluate the list of Squad Leader/Tank Commander duties and identify additional dimensions of performance in this job, we conducted focus groups with a number of additional SMEs.

Researchers coordinated with unit representatives from two Army installations located in the southeastern United States to gain access to SMEs. Volunteer participants included current and former Squad Leaders or Tank Commanders (i.e., the equivalent of Squad Leaders for M1 Armor Crewman) with recent and extensive experience serving in Infantry, Cavalry Scout, or Armor MOS. Participants included NCOs at the rank of Staff Sergeant or Sergeant First Class in each of these MOS. Given the COVID-19 pandemic restrictions, researchers coordinated and conducted a series of six virtual focus groups over a four-month period. Volunteer participants included seven NCOs from Infantry (MOS 11B), nine from Cavalry Scouts (MOS 19D), and four from M1 Armor Crewman (MOS 19K), for a total of 20 participants.

As the focus groups progressed, the content was adapted to incorporate input from previous focus groups and to refine the performance rating scales (PRS). During the first few focus groups, participants in each session reviewed the results of the job analysis survey for accuracy, identified additional dimensions of Squad Leader/Tank Commander performance that were not covered in the survey, and generated critical incidents for each dimension of performance that was discussed. Participants also reviewed examples of performance rating scales derived from previous research with NCOs (Horgen et al., 2013; Knapp et al., 2002; Kubisiak et al., 2005; Russell et al., 1996). After the initial focus group sessions, a draft set of performance rating scales was developed and subsequent sessions focused on reviewing these draft scales, identifying additional dimensions of performance, and then evaluating the rating scales for usability and interpretability. Each of these tasks helped to develop and refine the final set of ratings scales for assessing Squad Leader/Tank Commander performance.

Across all focus group sessions, several key themes emerged:

- Leading effective training is a critical aspect of performance in this role.
- Leading by example is an important aspect of a Squad Leader's/Tank Commander's job.
- A good Squad Leader/Tank Commander takes responsibility for their own mistakes, which is an important part of demonstrating integrity.
- It is important for Squad Leaders/Tank Commanders to be active learners, develop expertise in their MOS, and create a learning culture in the squad.
- Good Squad Leaders/Tank Commanders invest in and spend time mentoring and developing subordinates.
- It is important for Squad Leaders/Tank Commanders to exceed (i.e., not just meet) Army standards for physical fitness.
- The job of a Squad Leader/Tank Commander is the same regardless of MOS. The content of the tasks may be different, but the overall role is the same.

By combining this feedback with existing PRS for NCOs, the final performance rating scales were developed to assess the following 12 performance areas:

- Demonstrating Effort
- Demonstrating Integrity
- Maintaining Physical Fitness
- Showing Consideration and Support for Peers and Subordinates
- Handling Problems
- Displaying Tolerance
- Performing Administrative Duties
- Technical and Tactical Proficiency
- Leadership
- Mentoring
- Training Management
- Communication

SUMMARY AND CONCLUSIONS

The purpose of this research was to develop new criterion measures that can be used in future validation studies with Squad Leaders in Infantry (MOS 11B) and Cavalry Scouts (MOS 19D) or with Tank Commanders in M1 Armor Crews (MOS 19K). First, we developed three JKTs, one per MOS, by implementing a developmental framework that has been applied and refined by ARI in over a quarter century of research. The next steps will involve piloting and amending the initial forms to create a final form based on the pilot data. Piloting the initial forms provides valuable information about the internal consistency of the measure and item properties (Moriarty et al., 2009). This information can then be used to refine the tests and create more reliable and efficient measures. These pilot data will be collected and the measures will be refined as part of subsequent validation research with Squad Leaders and Tank Commanders in close combat MOS.

In addition, we also developed new rating scales to assess the performance of Squad Leaders or Tank Commanders in these same MOS. Using a combination of Army doctrine, existing performance rating scales, and feedback from SMEs, the resulting measure was developed to differentiate between high- and low-performing NCOs in these roles. As a next step, this measure will be used in subsequent validation research with Squad Leaders and Tank Commanders in close combat MOS. During this validation research, ratings on this measure can be provided by peers and/or supervisors of the participants. As with the JKTs, data from the validation research will be used to further refine the measure and ensure that all of the scales are working as intended.

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Appendix A

JOB KNOWLEDGE TEST DEVELOPMENT TRAINING



Knowledge Test (JKT) Development

Item Development Familiarization Training

JKT Item Development Training



- Purpose of test is to measure the individual's knowledge of job performance
- Items should measure this knowledge to the extent possible.
 - Performance Items: Can be performed on the test (e.g., calculations)
 - Performance-based Items: Ask the test-taker what they should do (involves recall and analysis)
- Avoid simple recognition items when possible
 - Items that ask test-taker to recall a term or definition

Item Development



- Items should be realistic and practical; they should not be obscure or trivial
 - Focus on performance that differentiates good from poor performers
 - Address performance where mistakes occur
 - Address performance where mistakes are consequential
- Difficulty: If an item is so difficult that few test takers are able to answer it, or so easy that most test takers answer it correctly, the item provides little information in differentiating good from poor performers

Distractors



- When writing distractors, incorporate:
 - Common misunderstandings of a concept or process
 - Common confusions between similar concepts, processes, or terms
 - Common errors you have seen, for example:
 - Using the wrong formula
 - Skipping a step
 - Familiar yet incorrect phrases
 - True statements that do not correctly answer the question

Item Components



- Stem – The premise of the item
 - It may be a question or an incomplete sentence
 - Should be a complete expression of the problem, missing only the essential information necessary to answer the question
- Response options (typically 4) – All the answer choices
 - Key – The correct answer
 - Distractors – The incorrect answer choices
 - The hardest thing to develop
 - Should be unique from each other and plausible enough to distract or lure the less informed person from the correct answer
 - Should be absolutely incorrect or unarguably inferior to the correct answer
 - Should be about the same length as the correct answer, similar in form and format, and written to the same level of generality/specificity

Distractors (cont.)



- When writing distractors, avoid:
 - Fictitious terms
 - Joke distractors (e.g., don't use 'HMO [Human Misery Organization]' as a distractor)
 - Using the wrong alternative in different forms for different distractors (i.e., make each distractor separate and distinct)

Item Types



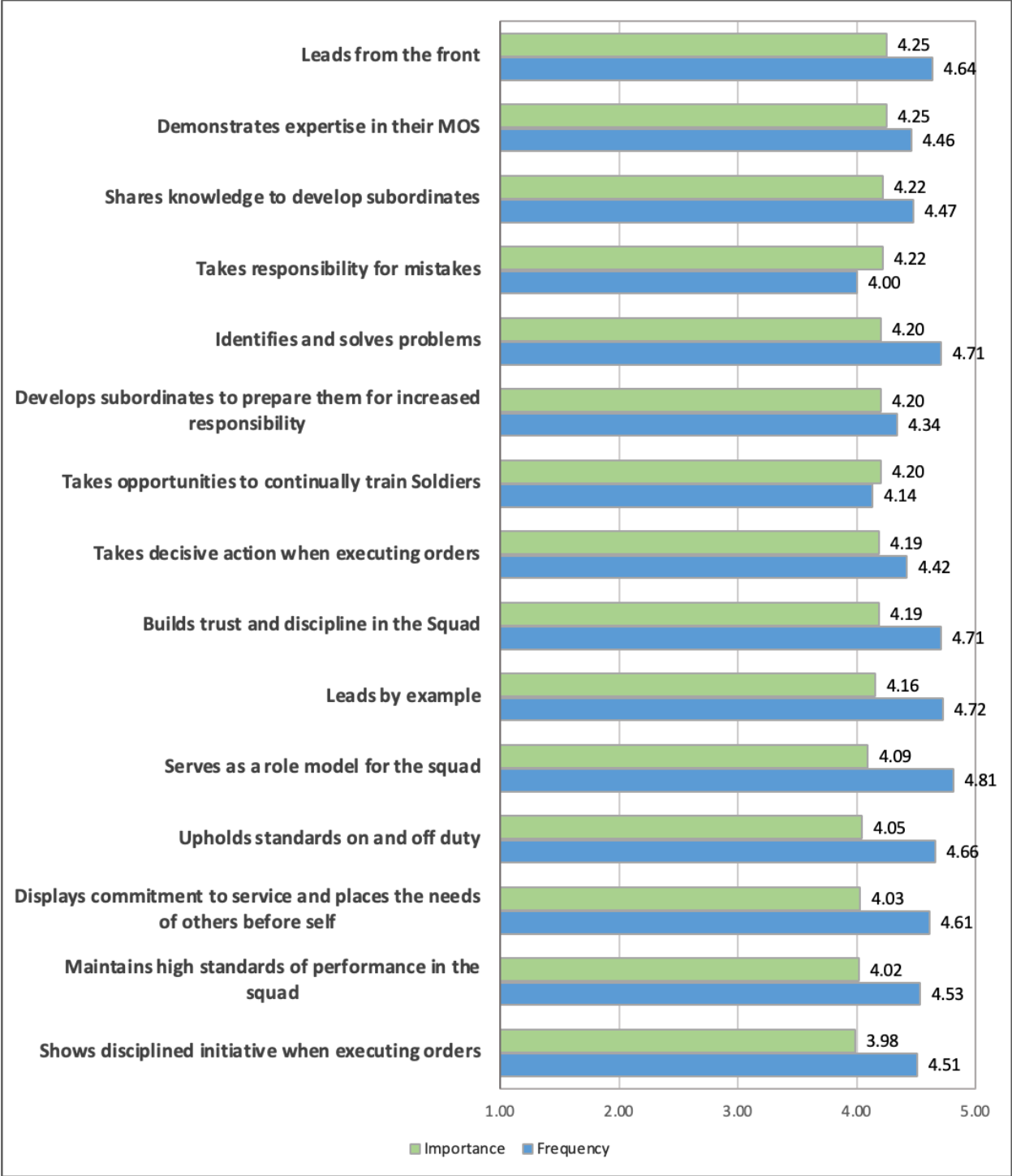
Multiple Choice:	Multiple Response:
Which is considered a primary color? a. Orange b. Green c. Purple d. Blue	Which is considered a primary color? a. Orange b. Yellow c. Purple d. Blue
Ranking:	Matching:
Arrange these animals from smallest to largest. a. Frog b. Cat c. Horse d. Elephant	Match each vehicle model with its make. a. Fiesta ___ Nissan b. Camaro ___ Toyota c. Sentra ___ Ford d. Tacoma ___ Chevy

Item Writing Guidelines

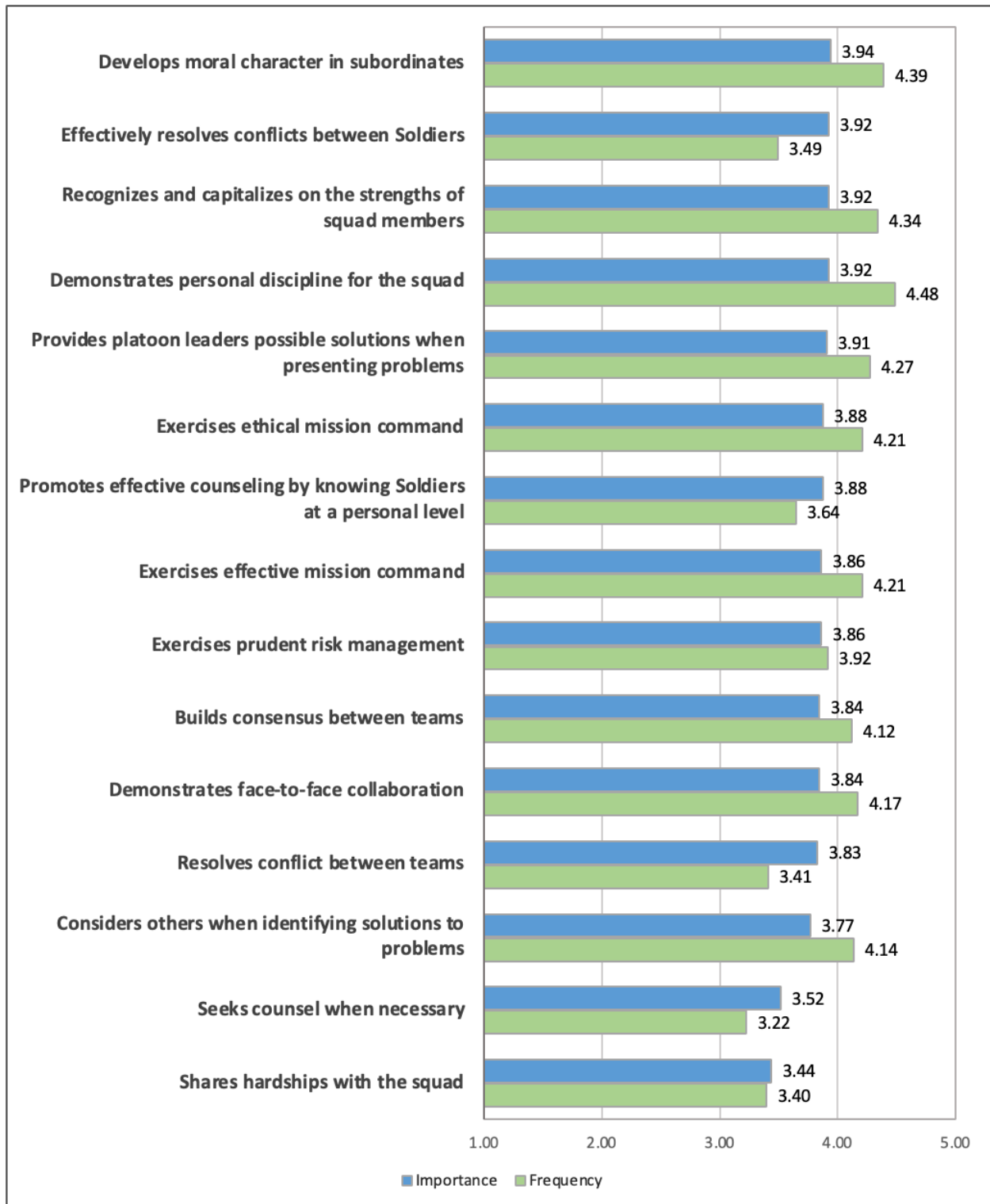


- Do not give clues to the correct answer within the item stem.
- Try to avoid absolutes like "always," "none," and "all."
- Do not write questions about trivial knowledge areas.
- Do not base several questions on the same scenario.
- Avoid "enemy items" that give each other away.
- Make sure all questions have exactly 4 response options.
- Do not use multiple response options (e.g., "Both 1 and 2 are correct," "None of the Above," "All of the above").

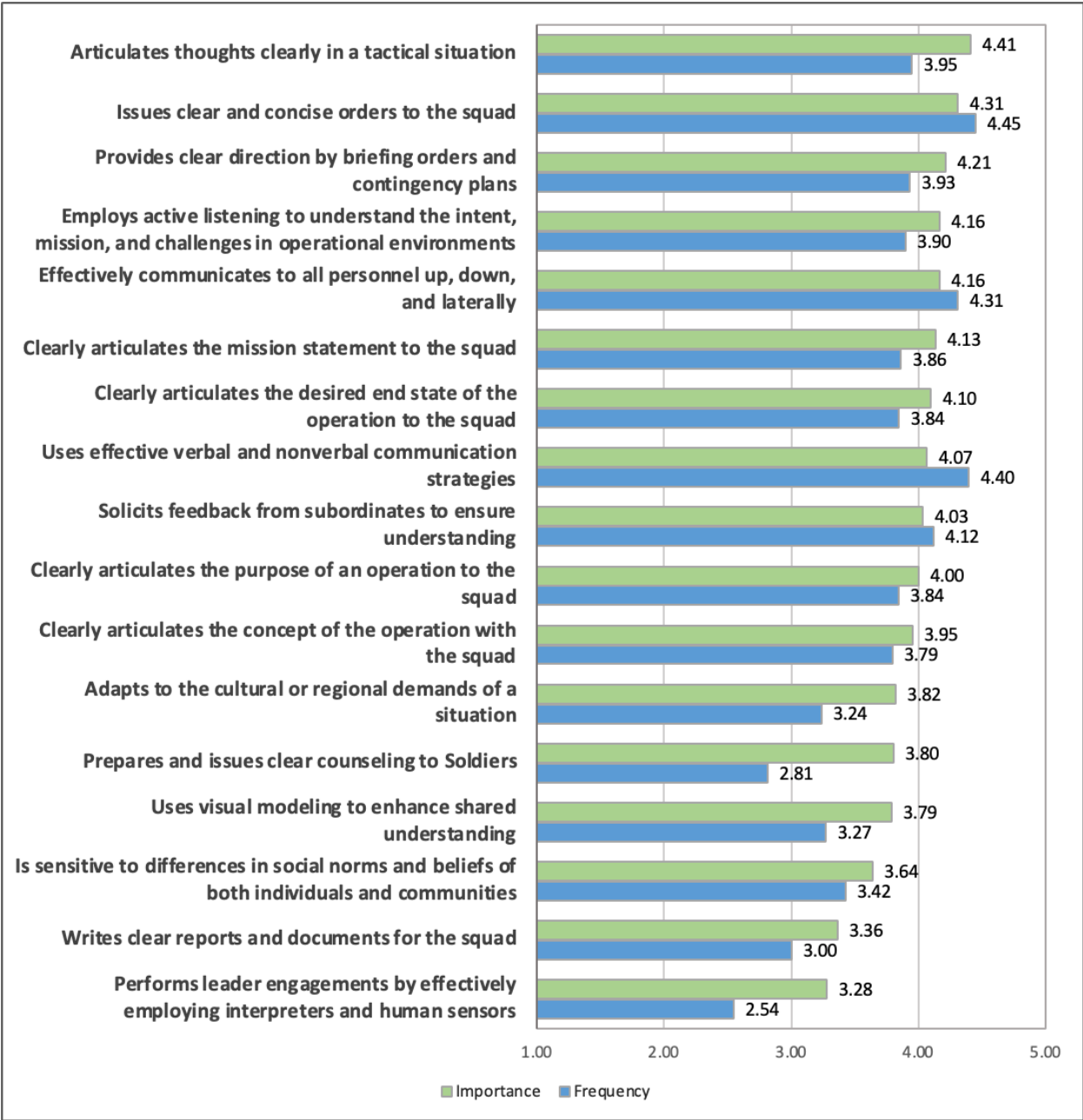
Appendix B
SQUAD LEADER SURVEY RESULTS



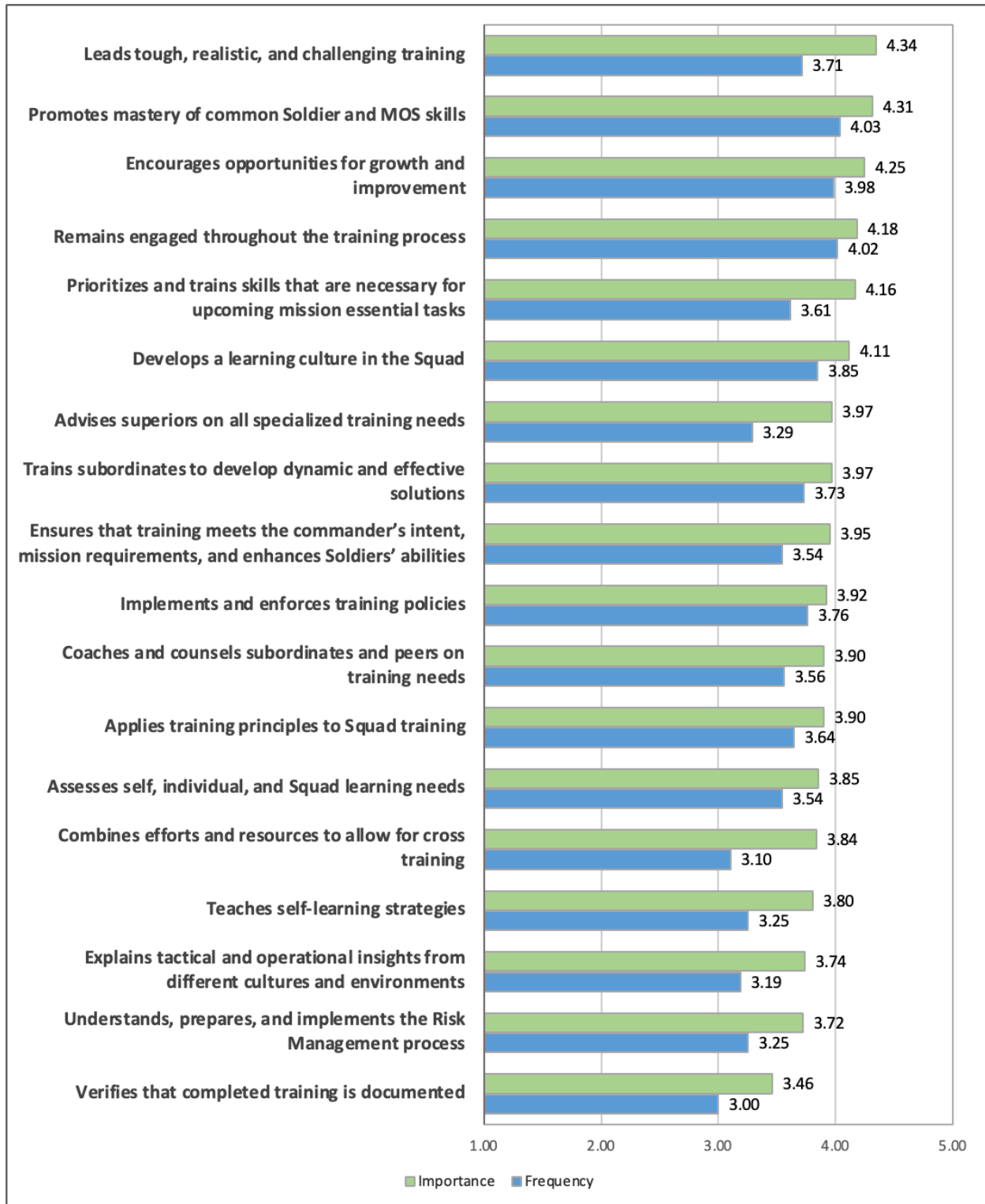
B1. Average Importance and Frequency Ratings of Leadership Duties



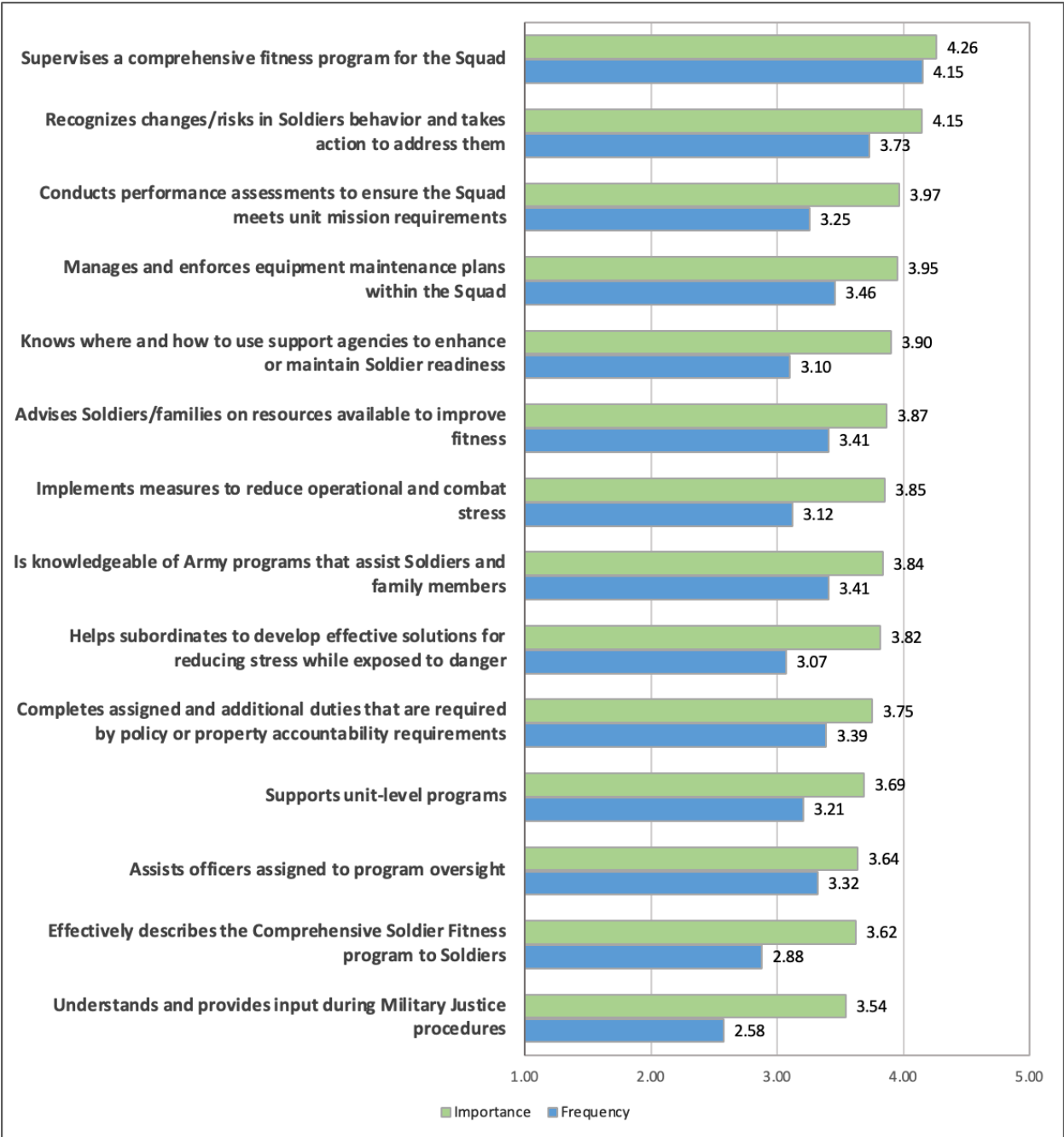
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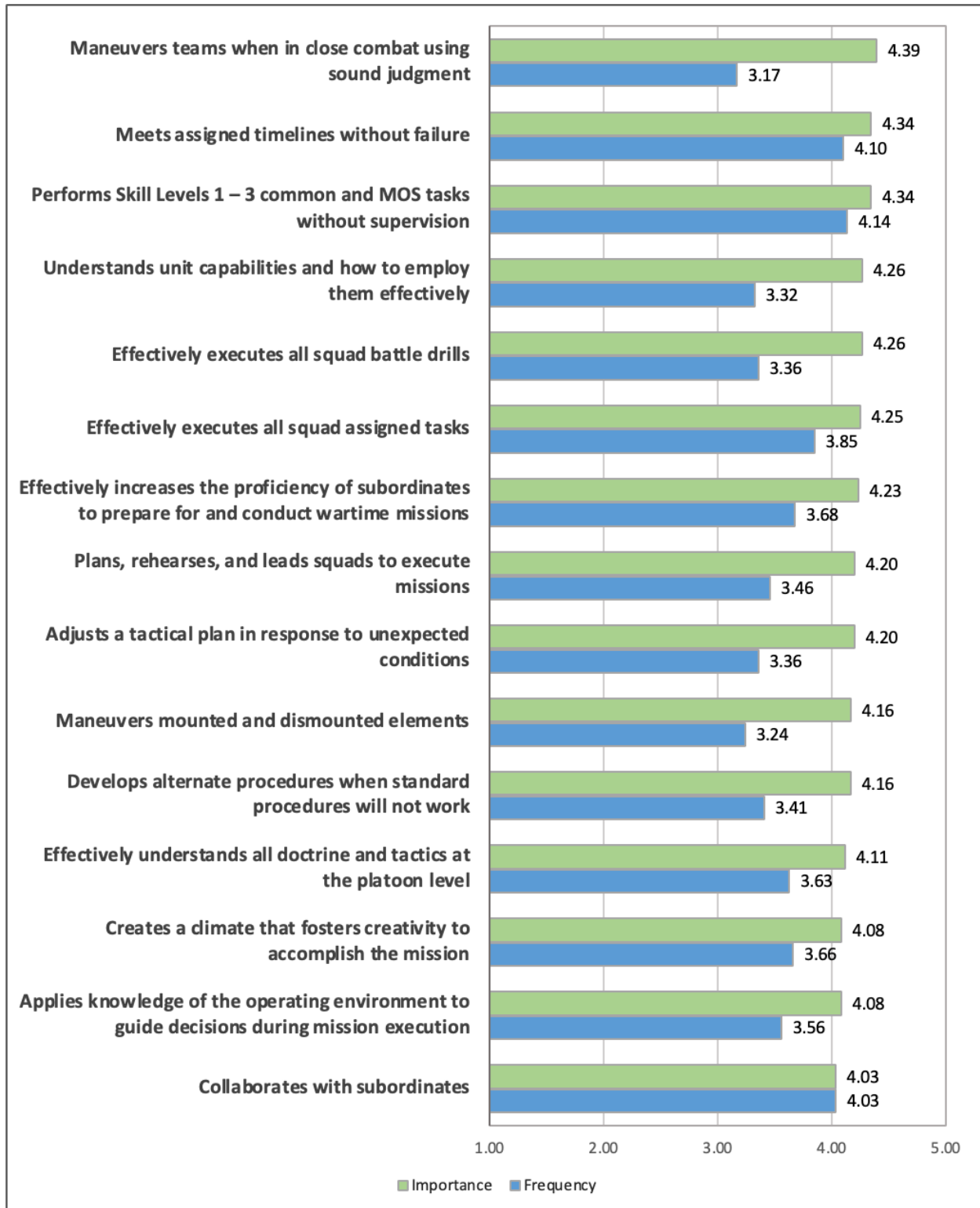
B2. Average Importance and Frequency Ratings of Communication Duties



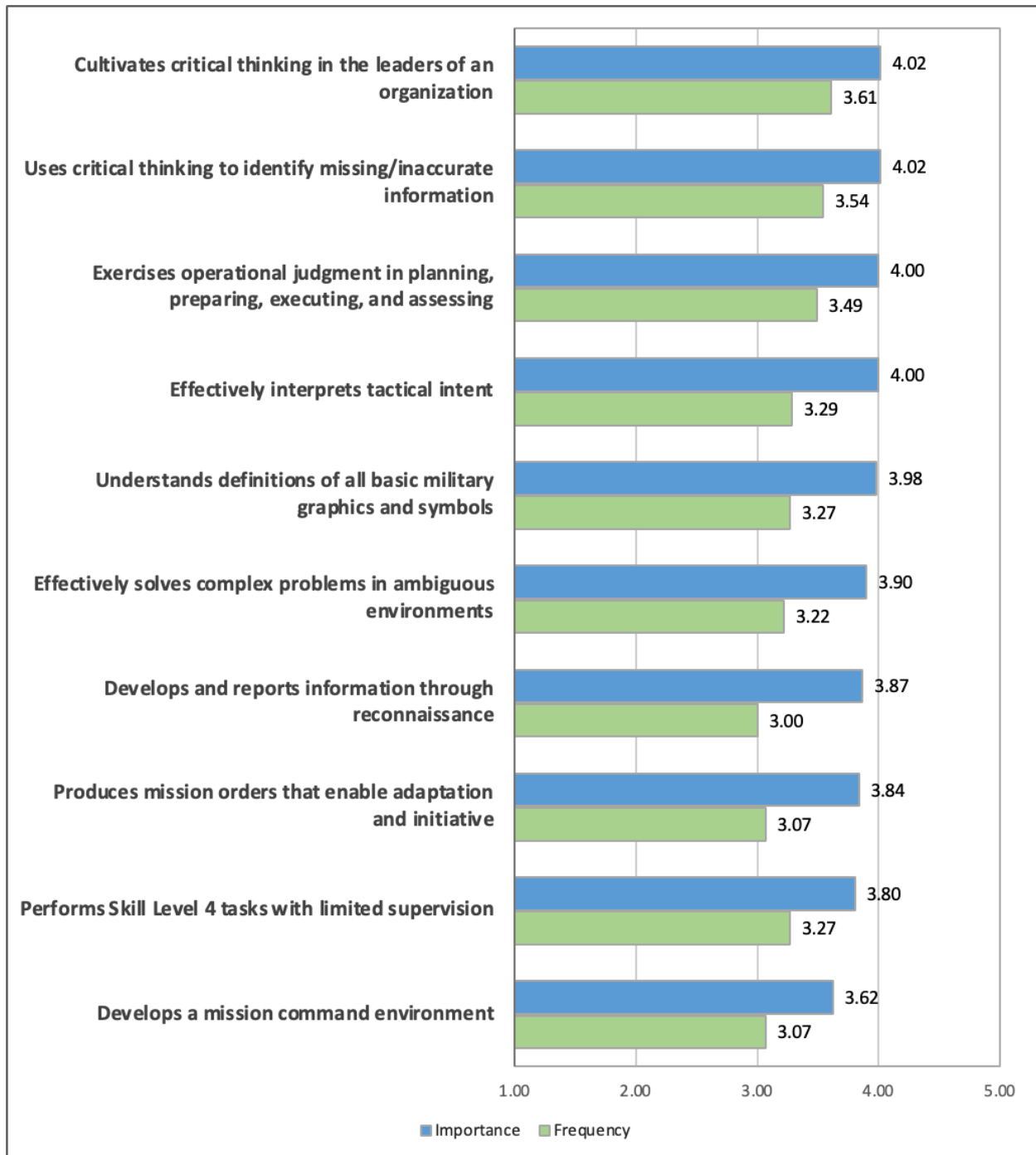
B3. Average Importance and Frequency Ratings of Training Management Duties



B4. Average Importance and Frequency Ratings of Program Management Duties



B5. Average Importance and Frequency Ratings of Operations Duties



B5. Average Importance and Frequency Ratings of Operations Duties Cont.