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Success in a Joint Environment

Identifying Attributes for Air Force Accessions



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Preface

Strengthening joint leaders and teams is an Air Force enterprise initiative aimed at optimizing leaders and teams so that they can consistently think, plan, and fight in joint environments.¹ To achieve this end state, airmen in the total force (officers, civilians, enlisted airmen, guard members, and reserve personnel) must effectively integrate and lead across the future joint warfighting landscape.

Foundational to this effort is understanding how the Air Force can improve its assessment process to (1) identify airmen with the attributes, qualities, and skills to succeed in joint positions and (2) assign personnel to such jobs more effectively. The attributes that the Air Force focuses on today might not be the same as those required to become a joint leader or team member in a joint environment. Identifying and evaluating additional attributes and qualities is necessary to ensure that airmen are prepared to acquire and take on the demands of a joint leader and in support of joint teams.

The purpose of this research effort was to help the Air Force recruit airmen with attributes that would position them to succeed in joint environments and, in doing so, improve overall service preparedness for the joint fight in future operating environments. The research identifies key attributes for new recruits and provides recommendations for establishing marketing, assessments, accessions, and recruiting standards to recruit candidates with these attributes.

The results of this work are reported in two volumes:

- This report, *Success in a Joint Environment: Identifying Attributes for Air Force Accessions*, contains a discussion about the methodology, top-level findings, and recommendations for the Air Force.
- The second volume, *Success in a Joint Environment: Additional Appendixes Containing Detailed Findings and Supporting Analyses*, contains detailed results from several steps in the methodology described in this report.

The research reported here was commissioned by the Department of the Air Force and conducted within the Workforce, Development, and Health Program of RAND Project AIR FORCE as part of a fiscal year 2019 project, “Joint Airmen Attributes for Recruiting and Accessions.”

¹ The completion of this report predates the establishment of the Department of the Air Force. In this report, *Air Force* refers only to the U.S. Air Force.

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RAND Project AIR FORCE (PAF), a division of the RAND Corporation, is the Department of the Air Force's (DAF's) federally funded research and development center for studies and analyses, supporting both the United States Air Force and the United States Space Force. PAF provides the DAF with independent analyses of policy alternatives affecting the development, employment, combat readiness, and support of current and future air, space, and cyber forces. Research is conducted in four programs: Strategy and Doctrine; Force Modernization and Employment; Resource Management; and Workforce, Development, and Health. The research reported here was prepared under contract FA7014-16-D-1000.

Additional information about PAF is available on our website: www.rand.org/paf/

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Summary

Issue

Strengthening joint leaders and teams is a top Air Force priority. One area of interest among Air Force leaders is whether it is possible to place more emphasis on joint participation at the earliest stages of an airman's career—in particular, during recruiting and accession. Researchers from RAND Project AIR FORCE investigated whether the Air Force could improve its ability to recruit joint leaders and team members and whether current practices are aligned with this goal.

Approach

To carry out this research, we

- conducted discussions with Air Force stakeholders to understand current Air Force recruiting processes—including marketing—and accession programs
- performed a literature review of materials related to formal assessments used during recruiting and accession
- developed an approach to identify attributes from joint development requirements that might signal joint potential in accession candidates
- examined various dimensions of proposed attributes that might be a short-term focus during recruiting and accession.

Findings

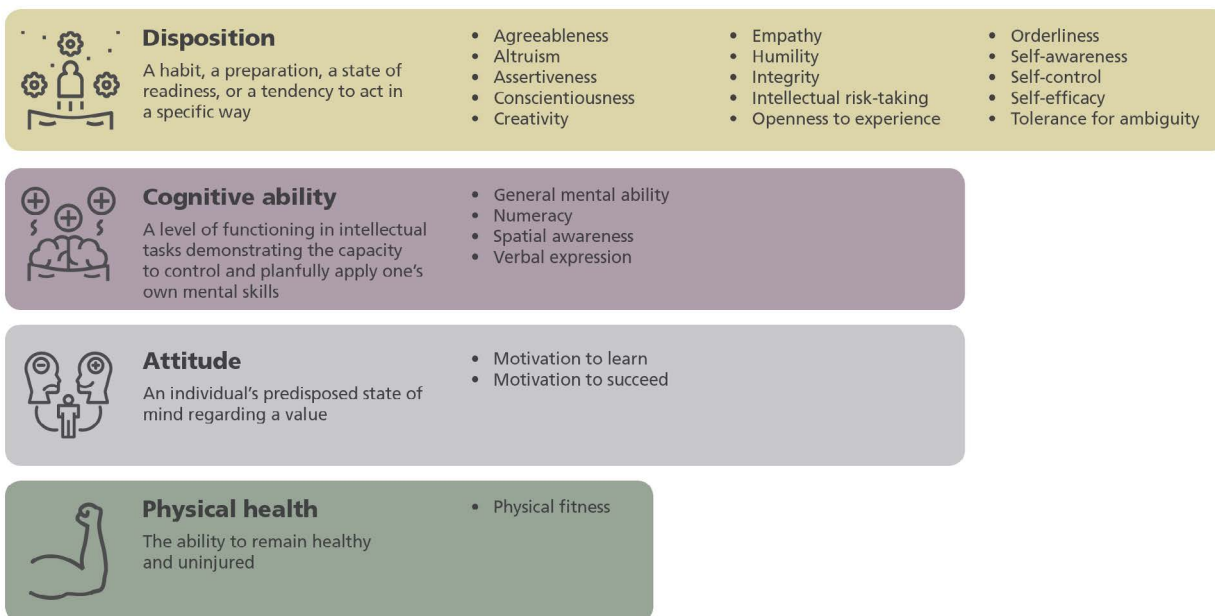
We found the following:

- No comprehensive set of attributes or other requirements was relevant to identifying joint potential.
- Some current processes collect information that is related to attributes, but information either is not collected or is collected but not used to assess airmen attributes in a systematic way.
- The methodology we developed identified 22 attributes for attributes that would position candidates for success in a joint environment (Figure S.1). Because this was a first look at identifying attributes, further research will be required before these attributes are incorporated into Air Force planning.

Observations

We developed the following overarching considerations to guide Air Force efforts to strengthen joint leaders and teams:

Figure S.1. Attributes for Success in Joint Environments



NOTE: We defined *attribute* in an accession context as a characteristic, quality, or feature of an individual and identified 22 attributes that could indicate joint potential in new recruits. All but the following six align with Air Force foundational competencies: self-awareness, humility, numeracy, physical fitness, spatial awareness, and self-efficacy.

- *Establish official joint development guidance.* The Air Force needs a clear statement of goals to guide policy actions aimed at improving the joint proficiency of airmen.
- *Target a segment of the force.* It might be more effective for the Air Force to prioritize developing joint proficiency in a portion of the force.
- *Formalize a method to identify attributes.* Codify a process by which the Air Force can select and update attributes. Our approach offers a starting point.

We developed the following considerations to help the Air Force identify attributes that indicate joint potential during recruiting and accession:

- *Systematically and uniformly collect and track attribute data.* Ensure that significant opportunities to gather information from accession candidates in a uniform way are not missed.
- *Leverage existing opportunities to assess for attributes,* including formal assessment tools and information-gathering during interviews with potential recruits.
- *Consider whether attributes should be emphasized in marketing.* In developing future marketing efforts, the Air Force needs to consider whether and how attributes should be included.

We developed the following attribute-specific observations:

- *Focus on the “low-hanging fruit”*—the attributes that are prominent in joint requirements, are more difficult to develop, and can be assessed with existing tools. Examples include self-control, openness to experience, integrity, and motivation to succeed.
- *Consider a pilot program to identify and track attributes.* Include the development of milestones and measures of performance for a targeted set of airmen in the pilot program.
- *Evaluate additional testing tools.* We identified other tools (such as recognized tests for specific attributes or structured interview protocols) that might be appropriate for this purpose and that the Air Force can draw on in evaluating alternative methods.
- *Consider revisions to the foundational competencies.* Consider adding to the foundational competencies attributes not aligned with them and using the single merged list for development, recruiting, and accession.

Acknowledgments

This research benefited from the advice and assistance of several people. Although they are not named in the report, we owe thanks to the stakeholders across the Air Force who took the time to share their views and insights on attributes contributing to success in a joint environment, current Air Force accession processes, and joint development and assignments in the early years of an airman's career. We thank Col Kate Travis and CMSgt Amy Long for providing context and information about the activities of the Strengthening Joint Leaders and Teams office.

We are also grateful for the participation of Col Mark Coggins, Mark Rose, and Laura Barron of Air Education and Training Command and Katie Gunther and Johnny Weissmuller of the Air Force Personnel Center, who provided information and valuable insight on Air Force recruiting, assessment, and accession practices. Thanks are also due to Maj Gen B. Chance Saltzman, who led the Air Force Strategic Integration Group, and Russell Frasz, Director, Force Development, Deputy Chief of Staff for Manpower, Personnel and Services, both of whom provided valuable feedback at different points during our project. Finally, we thank our reviewer and colleague Sean Robson for his thoughtful contributions over the course of the project, our reviewer and colleague Chaitra Hardison for her constructive suggestions, and Lt Gen (retired) Gina Grosso, whose review significantly improved the quality of this report.

Abbreviations

ABM	air battle manager
AECP	Airman Education and Commissioning Program
AETC	Air Education and Training Command
AFOQT	Air Force Officer Qualifying Test
AFROTC	Air Force Reserve Officer Training Corps
AFSC	Air Force Specialty Code
ALO	admissions liaison officer
ASVAB	Armed Services Vocational Aptitude Battery
BMT	basic military training
CJCSI	Chairman of the Joint Chiefs of Staff Instruction
CSO	combat systems officer
DAF	Department of the Air Force
DEP	Delayed Enlistment Program
DLA	Desired Leader Attribute
DoD	U.S. Department of Defense
EDLA	Enlisted Desired Leader Attribute
FA-2	Focus Area 2
GNA	Goldwater-Nichols Act
GPA	grade point average
HEXACO PI-R	HEXACO Personality Inventory-Revised
HSSP	High School Scholarship Program
ICSP	In-College Scholarship Program
JDA	joint duty assignment
JQO	joint qualified officer
JTF	joint task force
KSAOs	knowledge, skills, abilities, and other characteristics

MEPS	Military Entrance Processing Stations
OTS	Officer Training School
PAF	RAND Project AIR FORCE
SDI	Self-Description Inventory
SJLT	strengthening joint leaders and teams
TAPAS	Tailored Adaptive Personality Assessment
USAFA	U.S. Air Force Academy

Chapter 1. Introduction

Since 2016, the U.S. Air Force has invested significant time and resources into better understanding what it takes to operate effectively in a joint environment. Under the leadership of Gen David Goldfein, Chief of Staff of the Air Force, the Air Force has adopted the view that service-centric approaches to warfighting will be no match for the complex operational challenges posed by rising peer competitors (Saltzman and the Air Force Strategic Integration Group, 2018, p. 2).² In response to adversaries' increasing abilities to employ effects across warfighting domains and geographic regions, U.S. forces must be able to fight as a team, integrating and employing combat power in concert with interagency, intergovernmental, and coalition partners (Saltzman and the Air Force Strategic Integration Group, 2018, p. 2).

To address this challenge directly, Gen Goldfein announced in 2016 that one of his top three focus areas would be strengthening joint leaders and teams (SJLT) (Goldfein, 2016).³ Under this initiative, he formed a Focus Area 2 (FA-2) team, later known as the SJLT team, to identify challenges and opportunities to improve the service's effectiveness in the joint environment. One of the key areas that Gen Goldfein asked the FA-2 team to consider was whether it might be possible to do a better job emphasizing joint participation at the earliest stages of an airman's career. When he announced this initiative, he called for a reinvigoration of the development of the officer, enlisted, and civilian force with an eye toward "purposefully and systematically gain[ing] proficiency in joint warfare earlier in the careers of Airmen" (Goldfein, 2016, p. 1).

In response to the chief's directive, the FA-2 team issued the *Strengthening Joint Leaders and Teams Flight Plan*, which describes 26 projects for further research and policy development, including one that examines whether the Air Force could improve its ability to recruit joint leaders. The Flight Plan called on RAND Project AIR FORCE (PAF) to conduct a study to determine whether current practices are aligned with the future warfighting environment and with Gen Goldfein's intent to strengthen joint leaders and teams (Saltzman and the Air Force Strategic Integration Group, 2018, pp. 113–115). Working with the SJLT team, the PAF team developed a research plan to examine (1) the extent to which the potential to excel in the joint environment is currently taken into account in marketing, recruiting, and accessions activities and (2) whether there are additional opportunities the Air Force can leverage to screen, assess, assign, and track airmen for attributes that predispose them to excel in a joint environment. In this report, we define an *attribute* as a characteristic, quality, or feature of an individual—a topic that we discuss in greater detail in Chapter 4.

² The completion of this report predates the establishment of the Department of the Air Force. In this report, *Air Force* refers only to the U.S. Air Force.

³ The other two initiatives were related to revitalizing squadrons and enhancing multidomain command and control.

Study Purpose and Approach

The purpose of this research is to determine whether opportunities exist for the Air Force to take a more aggressive approach to joint personnel development by starting at the airmen's point of entry into the service. This research addresses five questions, which we have outlined in the following subsections.

What Are the Implications of Broadening Joint Development to All Airmen?

In 2016, Gen Goldfein indicated that officer, enlisted, and civilian personnel need to gain joint experience earlier in their careers to increase their proficiency to lead and influence joint teams (Goldfein, 2016). However, the desire to include the entire force and identify attributes as early as the point of airmen's entry into the service introduces new challenges to joint development, which has historically targeted a smaller, more-specialized group of airmen later in their careers. We describe those challenges and their implications for this study in Chapter 2.

To What Extent Does the Air Force Consider Attributes in Its Current Recruiting Processes and Accession Programs?

To determine whether the Air Force considers attributes in its current processes, we conducted a series of stakeholder discussions with Air Staff representatives, Air Education and Training Command (AETC) officials, Air Force marketing officials, and representatives from three main recruiting sources: the U.S. Air Force Academy (USAFA), Air Force Reserve Officer Training Corps (AFROTC), and Air Force Recruiting Service. In addition, we performed a literature review of materials related to assessments used in recruiting processes and accession programs. An analysis of this material resulted in a baseline from which to identify the universe of touchpoints during which the Air Force does or could identify attributes for various purposes. This topic is discussed in Chapter 3.

What Attributes Should the Air Force Look for During Recruitment and Accession That Indicate Joint Potential?

We searched Joint Staff and Air Force sources that outline the central tenets of joint development to determine whether a set of attributes that might indicate joint potential exists. We found that the Joint Staff and the Air Force have identified requirements for joint proficiency, often calling on military members to develop complex combinations of knowledge, skills, abilities, and other characteristics (KSAOs) over the courses of their careers. However, we could find no comprehensive set of attributes that is relevant to identifying joint potential.

In the absence of an existing set of attributes, the PAF team developed an exploratory approach to identify attributes related to joint potential. This report offers an initial attempt to identify attributes that will need further refinement through additional research. We began with requirements in Joint Staff and Air Force official documents (such as regulations and

instructions) and, using a method we refer to as *deconstruction*,⁴ derived attributes from these requirements. We discuss this process and the resulting attributes in Chapter 4.

How Can Opportunities Be Leveraged During Recruitment and Accession to Identify Candidate Airmen Who Possess These Attributes?

We examined various dimensions of the attributes that could provide direction for the Air Force in identifying relevant attributes during recruiting processes and accession programs. As we discuss in Chapter 5, we found four dimensions that are most critical to identifying next steps—including further research and, eventually, implementation—for Air Force leadership. These four dimensions are

- *proximity*: How prominent is an attribute in our deconstruction of joint development requirements?
- *malleability versus stability*: Can individuals develop this attribute over time, or is it something that is evident before an airman enters service?
- *existing tools to identify attributes*: Is it possible to assess a candidate's attributes by leveraging existing recruiting processes and accession programs?
- *alignment with foundational competencies*: Does the attribute align with the Air Force's newly approved foundational competencies, and does it potentially indicate areas that are already covered during force development? Are there gaps that could indicate the need to revise the foundational competencies, or, if feasible, should the Air Force ensure that the attributes that are unique to joint potential are considered during recruitment and accession?

In Chapter 5 and Appendix F, we discuss other existing tools that could be used to assess attributes.

What Next Steps Should the Air Force Take?

Our analysis concludes, in Chapter 6, with observations for how the Air Force can use the results of this assessment and steps the Air Force can take to better position itself for joint potential during recruitment and accession.

In Appendix A, we provide our definition of *attribute* and other related terms. In Appendix B, we provide additional information about existing Air Force assessment tools that are relevant to the discussion in Chapter 3.

Four additional appendixes are available in a second report, which can be downloaded at www.rand.org/t/RRA356-1.⁵

⁴ The idea of deconstruction, as used in this research, is similar to concepts and methods used in the social sciences to conceptualize and operationalize abstract constructs for measurement. In this report, *deconstruction* refers to the specific systematic and transparent methodology that we have developed in a way that is accessible to policymakers.

⁵ Appendix C in that report provides the results of our deconstruction for attributes that indicate success in a joint environment, while Appendix D provides the deconstruction results for constituent constructs. In Appendix E, we

Limitations

Identifying attributes that indicate joint potential could help the Air Force select candidate airmen who are poised to be successful in a joint environment and who might best benefit from joint development over the courses of their careers. We identified an initial list of attributes by deconstructing requirements drawn from official Air Force and Joint Staff documents. Because our approach was exploratory, this initial list might need to be refined to include additional joint development requirements of which we were unaware or that did not exist at the time the research was conducted. Our systematic approach allows this list to be refined.

In addition, we simplified our assessment in two ways that will be important to address in further research. First, we treated the attributes as though they are independent, although we understand that, in fact, many are interrelated. However, the research necessary to understand these relationships was beyond the scope of this effort. Second, although we identified an initial list of attributes, we did not attempt to determine the relative importance of each attribute as it pertains to joint development requirements. This task would also require additional research that would be useful to pursue in future work.

Furthermore, it is important to note that, although we make observations that suggest next steps for the Air Force, we do not recommend the immediate implementation of any new attribute screening or assessment procedures. The Air Force should undertake additional analysis and formal validation of the attributes identified in this report and could consider experimenting with the attributes, perhaps initially in a pilot program. Any immediate attempts to implement servicewide assessments or screening practices to identify the attributes identified in this report could, at best, result in wasted time and effort if the Air Force does not first clearly identify its joint requirements. At worst, hasty implementation could lead to unintentionally screening out qualified Air Force candidates.

provide the results of our analysis of attribute proximity to joint requirements. Appendix F contains our assessment of all dimensions for each of the 22 attributes.

Chapter 2. A Broad Perspective on Joint Proficiency and Its Implications

As mentioned in Chapter 1, in 2016, Gen Goldfein called on all Air Force personnel—officers, enlisted personnel, and civilians—to gain proficiency in joint warfare earlier in their careers (Goldfein, 2016). This directive reflected a view of joint proficiency that includes a broader set of personnel and joint experiences and might require beginning joint development, in the form of education, training, and assignments, at the outset of an airman’s career.

Gen Goldfein’s effort to strengthen joint leaders and teams is based on the premise that airmen need increased joint proficiency to better contribute to campaign-level planning and to stand up, lead, and support a joint task force (JTF) that is ready to execute campaigns on short notice (Goldfein, 2016). Undergirding this effort is personnel-driven emphasis on developing breadth and depth of joint proficiency across the entire Air Force. The Air Force has adopted the position that every airman needs to be ready to lead and influence joint teams because these teams typically call on forces from every echelon and across a variety of career fields (Goldfein, 2016; Hebert, 2017).

In this chapter, we examine this view of joint proficiency and discuss its implications for identifying attributes that indicate joint potential during recruitment and accession. The Air Force’s proposed approach is inherently challenging, both because it includes airmen in all specialties and because it emphasizes the identification of attributes during accession, when candidate airmen have not yet participated in the force development processes traditionally used to gain joint proficiency.

Joint Proficiency in the U.S. Department of Defense

Historically, the U.S. Department of Defense (DoD) has adopted a relatively narrow view of who needs to succeed in joint environments and what they need to be able to do. The central law governing joint requirements is the Goldwater-Nichols Act (GNA) (Pub. L. 99-433, 1986). Enacted in 1986, the legislation was a reaction to a growing concern in Congress and DoD that shortfalls in interservice cooperation were hindering U.S. warfighting effectiveness.⁶ To force tighter integration, the GNA shifted power centers across DoD from the military departments to the chairman of the Joint Chiefs of Staff and the combatant commands.⁷ The change required a

⁶ For an overview of problems with joint perspectives prior to the GNA, including the infamous problems that plagued Operation Eagle Claw (a failed Iranian hostage rescue in 1981), see Locher, 2004, pp. 33–59.

⁷ For more on the specifics of this power shift, see Locher, 2004, and Watson, 2001.

raft of related reforms across DoD regarding organization, training, procurement, doctrine, and policy.

From a personnel management perspective, the GNA required the services to take steps to “increase the quality, stability, and experience of officers assigned to joint organizations” (Mayberry, Waggy, and Lawrence, 2019, p. 1). For most of the history of the GNA, proficiency in “joint matters” has applied to only a relatively small pool of officers who have completed required and specially designated joint professional education and joint duty assignments (JDAs).⁸ By law, only half of formally designated JDA positions above the pay grade of O-4 have to be filled by joint qualified officers (JQOs).⁹ In turn, only this relatively small pool of JQOs is eligible for general or flag officer ranks (Mayberry, Waggy, and Lawrence, 2019, p. ix).

In 2007, lawmakers changed 2006 legislation to require that DoD update the joint qualification criteria to recognize that many officers, especially officers of more-junior grades, were gaining valuable joint experience in the battlespaces of Iraq and Afghanistan by necessity of the jobs they were being asked to do, but they were not receiving credit for it (U.S. Congress, 2006). During Operation Enduring Freedom and Operation Iraqi Freedom, many officers fought alongside coalition partners, nongovernmental organizations, and other U.S. military and civilian agencies for varying lengths of time in positions that were widely viewed as relevant to joint experience (Philpott, 2007). In response to the 2007 congressional mandate to update joint criteria, DoD established a points-based system that allows officers to self-nominate their experiences for joint credit, creating new opportunities and incentives for those officers to build joint credentials over the course of a career.

Because officers can self-nominate to receive joint credit, the number, type, and duration of activities that can potentially qualify for such credit have expanded significantly beyond the activities that are part of JDA positions. In particular, activities ranging from participation in the acquisition of multiservice platforms to command and control now qualify as joint activities. To signal the value of gaining joint proficiency early in a career, DoD also allowed officers of any grade to begin building joint credentials through the point system (DoD, 2012).

For the Air Force and the other military services, the number of JQOs is relatively small when viewed as a percentage of the total number of officers. Between fiscal year (FY) 2008 and FY 2017, the percentage of field grade JQOs in the Air Force has hovered between about 7 percent and 9 percent of all officers (Mayberry, Waggy, and Lawrence, 2019). DoD’s traditional

⁸ *Joint matters* is defined as the “development or achievement of strategic objectives through the synchronization, coordination, and organization of integrated forces in operations conducted across domains, such as land, sea, or air, in space, or in the information environment,” including strategy, operations, acquisition, and similar matters (10 U.S.C. § 668, Definitions).

⁹ JQO is a qualification achieved “upon completion of the requisite joint professional military education *and* completion of a full tour of duty in a joint assignment.” There are four “levels of joint qualification [Level I, Level II, Level III (aka Joint Qualified Officer (JQO)), and Level IV] to recognize the career-long accumulation of joint knowledge, skills, and abilities” (DoD, 2012, p. 1). Current statutory requirements for JQOs are contained in 10 U.S.C. Chapter 38, Joint Officer Management.

emphasis on JQOs as a relatively select group of officers, which is reflected in law, policy, and culture, appears to be at odds with Gen Goldfein's call for improving joint proficiency forcewide, which, in his view, requires participation from all Air Force personnel—officers, enlisted personnel, and civilians—and at every echelon.

Moreover, although the JQO system emphasizes joint proficiency as a means to generally increase warfighting effectiveness, the Air Force's position is that increased joint warfighting proficiency also should allow airmen to lead and influence JTFs. Given these goals, the task at hand for the Air Force is to determine the degree of joint proficiency needed for each airman. Effective JTF participation might require certain *kinds* of joint proficiencies, which might be developed only through certain career fields and might not necessarily be gained through the standard joint professional military education or assignments required to become a JQO. The variety of joint proficiencies needed by enlisted and civilian airmen and the optimal personal attributes and appropriate developmental experiences that best contribute to their success are even less clear.

Implications for Identifying Joint Potential During Recruitment and Accession

The Air Force's interest in identifying attributes that indicate joint potential and looking for those attributes in candidates during recruitment and accession indicates a more-flexible and comprehensive understanding of joint duty that has several implications for recruiting and accession practices, including the need for a broader variety of data to track joint activities, a set of attributes indicating joint potential, and a supportive organizational culture.

Data Are Unavailable for the Full Variety of Joint Activities

Because the Air Force's view of joint duty is so broad—including officers, enlisted personnel, and civilians across all career fields—efforts to track joint proficiency from the moment an airman enters the service create a significant data-management requirement for the service. In the legacy system established under the GNA, the criteria for joint specialty officer credit were straightforward. Now, however, officers can accumulate joint credit in a variety of ways at different stages of their careers, making it more difficult to accurately track airmen's accumulation of joint credit (Mayberry, Waggy, and Lawrence, 2019, p. 4). DoD currently tracks joint officer education and qualifications through the Joint Duty Assignment Management Information System (JDAMIS), but the system has struggled to keep pace with the expanding opportunities to accumulate joint credit, resulting in problems with the accuracy of the data.¹⁰

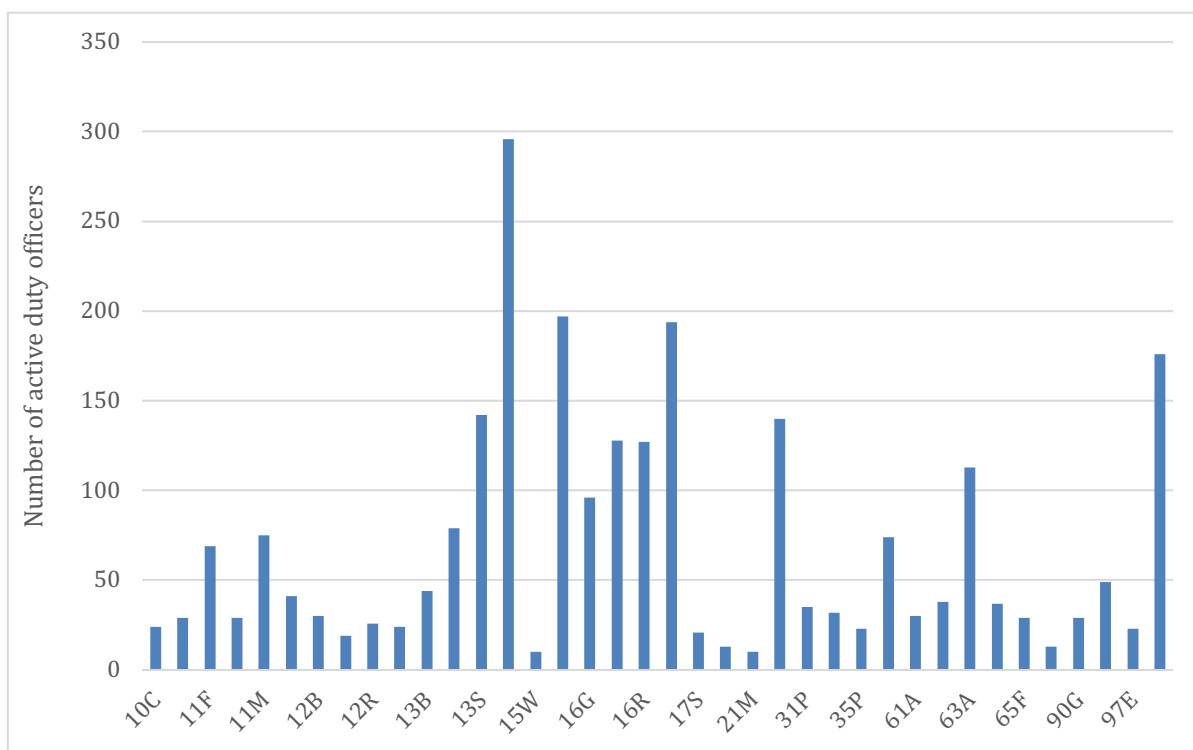
The Air Force faces an even bigger challenge in tracking joint experience for enlisted and civilian personnel, in addition to officers (Abbe, Mitchell, and Eliezer, 2018, p. G-3). Existing

¹⁰ For a good summary of JDAMIS problems, see Mayberry, Waggy, and Lawrence, 2019, pp. 4–5.

Air Force and DoD databases do not accurately capture this type of relevant information for the entire force. Although it is possible to leverage these data sets to determine the distribution of JDAs in Air Force career fields at any particular point in time, these databases do not include identifiers to capture the breadth of airmen participating in joint activities or the specifics of their participation.

For example, a snapshot of airmen's JDA assignments, as illustrated in Figure 2.1, provides an incomplete picture of joint participation. Although some officers serve in JDAs, thousands more officers, enlisted personnel, and civilians participate in a much broader variety of joint activities, from fighting alongside ground forces as tactical air controllers for a 12-month deployment to participating in joint exercises for two days as civilians or enlisted imagery analysts.

Figure 2.1. Active Duty Officers Assigned to Joint Duty Assignments, by Specialty



SOURCE: Officer Active Extract (BAE) and Manpower Authorizations (MPW) file provided to the authors by the Air Force Personnel Center. Data are as of July 2019.

NOTE: 10C = operations commander. 11B = bomber pilot. 11F = fighter pilot. 11G = generalist pilot. 11M = mobility pilot. 11S = special operations pilot. 12B = bomber navigator. 12G = generalist navigator. 12R = reconnaissance/surveillance/electronic warfare navigator. 12S = special operations navigator. 13B = air battle manager. 13N = nuclear and missile operations. 13S = space and missile. 14N = intelligence. 15W = weather. 16F = regional affairs strategist. 16G = Air Force operations staff manager. 16P = political-military affairs strategist. 16R = planning and programming. 17D = cyberspace operations. 17S = cyber warfare operations. 21A = aircraft maintenance. 21M = munitions and missile maintenance. 21R = logistics readiness. 31P = security forces. 32E = civil engineer. 35P = public affairs. 38F = force support. 61A = operations research analyst. 62E = developmental engineer. 63A = acquisition manager. 64P = contracting. 65F = financial management. 71S = special investigator. 90G = general officer. 92S = student officer authorization. 97E = executive officer above wing level.

To manage the challenge of tracking this participation, the service is developing its own joint tracking system, known as the Joint Talent Tracking and Management System (JTTMS). However, when this research was conducted, JTTMS was not available, so it was not possible to accurately identify the set of joint activities commensurate with the Air Force’s view of joint participation—the type of information necessary to conduct a job analysis that would serve as the basis for identifying attributes related to joint participation. We explain this dynamic in more detail in Chapter 4.

Attributes Are Needed to Help Identify Candidate Airmen with Joint Potential

The Air Force wants *the entire force* to gain joint warfighting proficiencies beginning at the point of recruitment and accession. But what are these proficiencies, and is it possible to determine a single set of proficiencies that applies across the entire force?

The Joint Staff and the Air Force have issued a variety of official publications detailing joint development requirements, as we discuss in Chapter 4. However, these requirements often imply a higher level of knowledge and proficiencies in joint matters than would typically be applicable to candidate airmen at the time of recruitment and accession. For example, one of the desired leadership attributes listed in the Chairman of the Joint Chiefs of Staff Instruction (CJCSI) for officer professional military education calls for “understanding the national security environment and the instruments of national power” (CJCSI 1800.01E, 2019). Therefore, it is not clear that these requirements as currently stated provide helpful guidance for the Air Force as it seeks to identify airmen’s joint potential during marketing processes, recruiting processes, and accession programs. Instead, a set of desired attributes needs to be developed that can be used to assess airmen during recruitment and accession.

Maintaining a Supportive Organizational Culture Is Necessary

Although an airman’s individual attributes might influence the airman’s success in carrying out joint assignments, many other factors influence airmen’s career trajectories to more-senior joint roles. As a result, it is not sufficient for the Air Force to simply consider what assessment options exist for a given attribute or how—or whether—to spend resources to develop certain attributes. The Air Force also needs to ensure that the organizational culture supports these development decisions—specifically, by encouraging and reinforcing desired behaviors and discouraging undesirable ones. In the absence of an organizational culture and structure that incentivizes joint participation and proficiency, efforts to identify attributes that indicate joint potential early and to develop those attributes over the course of a career are unlikely to be successful.

Relevance to This Study

The most immediate obstacle to identifying airmen with joint potential at the point of entry into service is the absence of a set of attributes that are related to the concept of joint proficiency against which to assess candidate airmen. Because the Air Force takes the position that its entire force needs to gain joint proficiency, it is not possible to narrow the scope of our investigation to a particular set of attributes that are related only to leading and influencing JTFs. Therefore, the Air Force must rely on existing and relatively general joint development requirements to set standards for joint proficiency. Yet these requirements often call on military members to develop complex combinations of KSAOs, which might not be relevant at the point of accession. As a result, we developed an approach, which we discuss in detail in Chapter 4, to identify attributes derived from these requirements that could be assessed during recruitment and accession.

Chapter 3. Considering Attributes During Current Recruiting Processes and Accession Programs

An understanding of current Air Force recruiting processes and accession programs serves as a baseline for identifying touchpoints at which the Air Force has the opportunity to formally or informally assess the attributes of potential recruits during selection. During these processes, the Air Force can leverage existing tests, assessments, or other tools to identify and evaluate attributes of candidate airmen, including attributes that predispose airmen to excel in joint environments, which we will discuss further in Chapter 5.

We were unable to find any single source of documentation that systematically explains Air Force recruiting processes—including marketing activities—and Air Force accession programs. Therefore, we embarked on a series of stakeholder discussions with the Air Staff's manpower, personnel, and training policymakers; representatives from AETC who are responsible for recruiting, accessions, and development; and officials from USAFA and from the Air Force Recruiting Service. We also reviewed professional literature on Air Force marketing, recruiting, and accessions; Air Force Instructions; and websites, including external sites that are available to potential Air Force applicants.

We did not examine civilian hiring practices to the same extent that we examined those for uniformed airmen. For the armed services, there are numerous opportunities during recruiting and accession to systemically identify attributes. Opportunities to screen civilians for attributes might include various stages of interviews, letters of recommendation, or separate testing sessions. Civilians, of course, could be assessed and then further developed over the courses of their careers.

It is important to clarify the following activities that are often used to generally describe entry to service but that have subtly different meanings: recruiting processes and accession programs. Air Force recruiting for enlisted personnel is the process by which individuals are contacted and assessed for entry into the Air Force. Air Force recruiting for enlisted personnel includes activities undertaken by Air Force recruiters, activities at the Military Entrance Processing Stations (MEPS), and oversight activities at the Air Force Recruiting Service. For officers, Air Force recruiting efforts vary by source of commissioning and include the efforts of admissions liaison officers (ALOs) and attempts to encourage individuals to join AFROTC detachments on college campuses.

The term *accession programs* generally refers to training programs for individuals who have been selected for entry into the Air Force, such as basic military training (BMT), AFROTC, USAFA, and Officer Training School (OTS). The majority of the selection process for enlisted personnel occurs before entry into BMT; however, officer accession programs do have selection components, which we focus on in this chapter. Efforts to market the Air Force to prospective

airmen are part of the overall recruiting process, but we touch briefly on this topic because it was an area of interest to the SJLT team and was mentioned specifically in the Flight Plan (Saltzman, and the Air Force Strategic Integration Group, 2018, p. 113).

In this chapter, we provide a broad overview of enlisted and officer recruiting processes, accession programs, and related assessment tools.

Enlisted Recruitment and Accession Practices

The process for becoming an enlisted airman often begins with an initial conversation with a recruiter to determine the recruit's motivation for joining the Air Force and to ensure that the recruit meets basic requirements associated with maintaining fitness standards, not abusing substances, and remaining in good standing with the law (which we discuss in later sections).

At this point, recruiters might schedule the recruit for the Armed Services Vocational Aptitude Battery (ASVAB), which we discuss further later, or they might review a recruit's ASVAB scores if the recruit has already taken the assessment. During these initial conversations, recruiters might unofficially assess individuals for noncognitive attributes. For example, some recruiters might unofficially assess humility by comparing how well a recruit thinks they will do on the ASVAB with how well they actually do on the ASVAB.¹¹ Recruiters take different approaches to these conversations, and these conversations are generally informal, nonevaluative, and unrecorded.

If a recruit meets the basic criteria and completes all required forms, the recruiter then schedules the recruit for military enlistment processing. MEPS are located in most states. At MEPS, recruits are given a physical (medical) exam, discuss background screening procedures, take the ASVAB (if they have not yet taken it) and the Tailored Adaptive Personality Assessment System (TAPAS), and discuss job choices based on their ASVAB scores and other job-specific requirements. Once recruits are selected, they enter BMT, or they might enter the Delayed Enlistment Program (DEP) before attending BMT (U.S. Air Force, undated-a).¹²

The Armed Services Vocational Aptitude Battery

The ASVAB is used (1) to determine whether recruits possess the necessary cognitive ability to join the Air Force and (2) to classify individuals into appropriate career fields (Air Force Instruction 36-2002, 2018). All individuals who wish to enlist in the Air Force must complete the ASVAB. It is made up of the following ten tests (or batteries):

1. general science

¹¹ The example was given in a discussion with a subject-matter expert on May 1, 2019.

¹² The DEP allows an Air Force recruit to complete their application to the Air Force and reserve a place in an Air Force specialty before a place is available for them to enter BMT or their follow-on technical school. While they wait, they remain under the supervision of their recruiter to ensure that they remain qualified. In addition, while recruits are in the DEP, they can prepare to enter BMT.

2. arithmetic reasoning
3. word knowledge
4. paragraph comprehension
5. mathematics knowledge
6. electronics information
7. auto information
8. shop information
9. mechanical comprehension
10. assembling objects.

Each of the ten tests is used to calculate scores for one of four domains—science/technical, math, verbal, and spatial (ASVAB, undated). Some of the test batteries, including arithmetic reasoning, mathematics knowledge, paragraph comprehension, and word knowledge, are combined into the Armed Forces Qualifying Test (AFQT), and individuals who take the AFQT receive scores from 1 to 99, based on percentiles. The AFQT is used to determine whether an individual is qualified to enlist. The Air Force also uses four composite scores to determine career eligibility. These composite scores are for mechanical, electronic, administrative, and general categories. Scores from a subset of the ten batteries listed above are used to compute the composite scores in each of these formulas. For example, the electronic composite score is composed of the arithmetic reasoning, mathematics knowledge, electronics information, and general science subtest scores (ASVAB, undated). We provide a description of each subtest in Table B.2 in Appendix B.

The Tailored Adaptive Personality Assessment System

TAPAS is a personality assessment that is used by the Air Force to determine eligibility for specific career fields. Nearly all individuals wishing to enlist take TAPAS at the MEPS. TAPAS is computer based, is adaptive, and uses multidimensional pairwise preference items to assess candidates based on personality dimensions (Stark et al., 2014).¹³ The assessment is based on the Big Five personality dimensions: extraversion, agreeableness, conscientiousness, emotional stability, and openness to experience (Lytell et al., 2018, p. 86). TAPAS also measures an individual's likelihood to maintain physical fitness. Approximately 20 subdimensions are nested under the five dimensions (Stark et al., 2014). We list the TAPAS dimensions in Table B.1 in Appendix B. Researchers have used TAPAS results to understand connections between personality dimensions and attrition and motivation as it relates to performance (Dragow, 2013).

¹³ The use of pairwise preference items is one of several mechanisms to make it difficult for individuals to fake responses to TAPAS or to strategize with others about how to answer questions, which is a general concern about personality assessments. Other mechanisms to prevent faking include the forced-choice nature of the test and the adaptive nature of the test, which selects from a pool of 700 statements and more than 200,000 items based on the respondent's previous answers. For more on TAPAS and faking, see Dragow et al., 2012; Lytell et al., 2018; and Stark et al., 2014.

Personality assessments could be beneficial for screening military accessions because research has shown that personality variables on personality assessments correlate with career success and job performance (Stark et al., 2014). These tests also are an opportunity to collect data that can be used to assess the attributes of potential airmen. Most research relating to TAPAS has been sponsored by the U.S. Army, and initial testing began in November 2005 on Army recruits at three U.S. locations. The Air Force started administering TAPAS at MEPS locations in 2009 because TAPAS has been shown to predict success in training for five enlisted Air Force Specialty Codes (AFSCs) (Drasgow, 2013). These AFSCs are explosive ordnance disposal (EOD), air traffic control (ATC), security forces (SF), fusion analyst, and survival evasion resistance escape (SERE).¹⁴

Officer Recruitment and Accession Practices

In contrast to the single pathway for enlisted airmen, there are three primary pathways into the Air Force for officers: OTS, AFROTC, and USAFA. An additional pathway that we do not discuss in this chapter, Commissioned Officer Training, is the pathway specific to religious, legal, and health professionals, and the process is relatively similar to OTS.

Officer Training School

Individuals who have already obtained a college degree are eligible for OTS. OTS is a 9.5-week program held at Maxwell Air Force Base in which new officers are prepared for a career in the Air Force through training in such topics as Air Force history and customs, leadership development, and military management (U.S. Air Force, undated-d). Enlisted members on active duty also are eligible to apply to OTS.

Like the path for enlisted recruits, the path for many OTS candidates begins with an initial conversation with a recruiter to determine whether they meet basic requirements and are qualified. Officer candidates take the Air Force Officer Qualifying Test (AFOQT), which includes the Self-Description Inventory (SDI) personality assessment. We provide more detail about the AFOQT and SDI later in this chapter and in Appendix B. OTS candidates are also processed through the MEPS, where they are given a physical (medical) exam (Air Force Instruction 36-2005, 2018).

OTS candidates must meet an OTS selection board. OTS selection boards are held in February and August each year and evaluate candidates on numerous factors, including their academic records, employment records, and interview results. Prior to the selection board, candidates are interviewed by an Air Force Recruiting Service interviewing official or a unit commander, who completes Section III, the interview evaluation, of Air Force Form 56, *Application for Training Leading to Commission in the United States Air Force* (Air Force Form

¹⁴ These five AFSCs were provided by subject-matter experts on August 18, 2019.

56, 2006). OTS selection boards evaluate candidates on their “work experience, accomplishments, adaptability, character, leadership ability, potential for future growth and other recommendations” (U.S. Air Force, undated-b).

Similarly, interviewers can elaborate on a candidate’s officer potential in Air Force Form 56. Interviewers are asked to rank candidates on a five-point scale (from below average to outstanding) on ten factors, including confidence and maturity, attitude, motivation, leadership potential, mental alertness, communication skills, and potential to complete the program. We detail these ten factors in Table B.5 in Appendix B. Additionally, OTS selection boards consider performance reports and a letter of recommendation from the applicant’s commander for active duty applicants to OTS. OTS selection boards use SDI results when evaluating low-scoring candidates. Currently, the SDI is used in the Officer Suitability Measure (OSM), a metric used in OTS selection boards. OSM is most predictive when evaluating individuals’ suitability for military service: it is used as part of a suitability measure to screen out a portion of individuals in the OTS selection board process.

In contrast to USAFA and AFROTC, into which candidates are accepted while they are in high school or college without first committing to a certain career field, OTS candidates apply after they have finished college and perhaps even worked for several years. Therefore, they likely apply with a more specialized set of skills and a better idea of what career fields interest them than AFROTC or USAFA applicants. OTS selection boards might look for individuals who will be successful officers and who, therefore, might exhibit many attributes that are necessary for successful joint airmen, but they also take into consideration the Air Force’s needs in certain occupations.¹⁵ As a result, there might be times when officers who have the desired KSAOs to excel in Air Force joint environments nevertheless are not selected in favor of other candidates who help meet career field shortages.

Air Force Reserve Officers’ Training Corps

AFROTC prepares officers for entry into the Air Force and provides some individuals with college scholarships in exchange for service in the Air Force as officers upon their graduation. Specific types of AFROTC programs, all with slightly different processes, are the Airman Education and Commissioning Program (AECMP) for enlisted airmen who wish to attend college, the In-College Scholarship Program (ICSP), and the High School Scholarship Program (HSSP).

The application process varies for each of the three types of applicants. The application for high school students includes ACT/SAT scores, transcripts, fitness assessments, and extracurricular activities. After high school applicants submit required paperwork, they are interviewed by ALOs or AFROTC detachment personnel (AFROTC Instruction 36-2011, 2018). Current college student applications are less centralized and depend on detachment staff at

¹⁵ This information was provided in a discussion with officials from the Air Force Recruiting Service on June 26, 2019.

specific colleges and universities to “evaluate current cadets and highly qualified students on their academic performance, physical fitness, and academic major to determine eligibility and competitiveness for scholarship nomination and consideration” (AFROTC, undated). Enlisted airmen seeking commissions must coordinate their applications through their base education offices, where they complete Air Force Form 56, which includes information about their academic records, employment records, and interview results. See Table B.5 in Appendix B for more information about the criteria for these candidates.

U.S. Air Force Academy

USAFA is a four-year baccalaureate institution located in Colorado Springs, Colorado. The admissions process is highly competitive and resembles college admissions more than it resembles accession processes through other pathways. Upon graduation from USAFA, cadets become Air Force officers, so the admissions process is designed to select individuals who will succeed as Air Force officers.

USAFA lists ten steps of the admissions process. These steps include submitting required materials, such as a precandidate questionnaire and writing samples. The precandidate questionnaire asks for preliminary information—such as high school name, test scores, and grade point average (GPA)—and determines whether an applicant can move on to other parts of the application. Other required materials include teacher recommendations, test scores, school transcripts, extracurricular activities, and the candidate fitness assessment (USAFA, undated). Final decisions are based on three factors: (1) an academic composite score, which includes SAT/ACT scores and academic ranking; (2) a leadership composite score, which includes activities, leadership, and resume; and (3) a selection panel score, which includes a review from the ALO, writing samples, teacher evaluations, recommendations, and the fitness assessment.

The academic composite score makes up 60 percent of the total score, and the leadership composite score and selection panel score each make up 20 percent of the total score (Hardison, Burkhauser, and Hanser, 2016). Members of the USAFA admissions team try to admit cadets who will be successful officers and, when reviewing candidates, look for such traits as empathy, integrity, and organization. They use many aspects of the application, but materials from the leadership composite score often are particularly helpful in assessing candidates on these traits. For example, recommenders might discuss a candidate’s integrity, or a candidate might discuss organizational or management skills when they describe extracurricular activities.¹⁶ Additionally, all USAFA applicants must receive nominations from their congressional offices. Although the USAFA admissions team works with congressional staff to ensure that this process is relatively standardized, congressional offices might have additional criteria that they use to evaluate potential nominees.¹⁷

¹⁶ This information was provided in a subject-matter expert discussion on July 3, 2019.

¹⁷ This information was provided in a subject-matter expert discussion on July 3, 2019.

All USAFA candidates are interviewed by an ALO. ALOs play an important role in USAFA admissions. ALOs identify, mentor, and evaluate USAFA applicants throughout the process. ALOs are generally volunteers, although some who are in the Air Force Reserve might receive deferred compensation (Air Force Instruction 36-2019, 2018).¹⁸ ALOs interview each candidate and evaluate the candidate in a variety of areas on a scale of 1 (lowest) to 5 (highest). ALOs evaluate candidates in such areas as integrity, empathy and respect for others, and organizational skills.¹⁹ After the interview, ALOs fill out Air Force Form 4060 and rank candidates on these criteria. This form is one of the first things selection board reviewers will see when opening a candidate's file (Air Force Form 4060, undated).

Air Force Officer Qualifying Test

The AFOQT, which officer candidates take when they are in college, has two primary purposes: It is used (1) to determine a candidate's eligibility for OTS and (2) to qualify candidates for certain occupations as OTS candidates or AFROTC and USAFA cadets. It is not an admissions requirement but instead is used to qualify individuals for pilot and combat systems officer (CSO) positions and for air battle manager (ABM) training (U.S. Air Force, 2014a).

The AFOQT has 12 sections, from traditional standardized test sections, such as verbal analogies and arithmetic reasoning, to situational judgment tests and aviation information sections. These sections are used to calculate composite scores that qualify an individual for these career fields. For example, the word knowledge, math knowledge, table reading, and block counting sections are used to create the composite score for a CSO, which is intended to measure how successful an individual will be in CSO training (U.S. Air Force, 2014a). The SDI is a personality assessment that is part of the AFOQT; we provide more detail about the SDI in the next section. We provide a list of AFOQT subtests and associated descriptions in Table B.4 in Appendix B.

Self-Description Inventory

The SDI is a personality assessment and has been included on the AFOQT since 2005. Like TAPAS, it is based on the Big Five personality traits (Weissmuller et al., 2004).²⁰ In 1994, Raymond E. Christal developed the assessment using factor analysis, which consisted of trait and behavioral descriptions (Manley and Weissmuller, 2017; Weissmuller et al., 2004). Since then, the Air Force has altered the test to be more in line with Air Force values and to improve validity in job selection procedures (Weissmuller et al., 2004). As of this writing, the SDI is made up of six domains and more than 20 facets. The six domains are agreeableness, neuroticism,

¹⁸ This information was provided in a subject-matter expert discussion on July 3, 2019.

¹⁹ This information was provided in a subject-matter expert discussion on July 3, 2019.

²⁰ In some literature, the SDI is referred to as the *SDI+*. Because it is listed as the SDI on AFOQT Form T in Weissmuller et al., 2004, we refer to it as the *SDI* in this report.

extraversion, conscientiousness, openness, and Machiavellianism. Table B.3 in Appendix B contains descriptions for all domains and facets.

The SDI is being considered by the Air Force as a tool to use in job match classification and prediction of success in occupation-specific training. In fact, in 2014, Manley and colleagues included the SDI in their analysis of the predictive validity of sections of the AFOQT for determining success at 17D Air Force Specialty Phase II School, which is training for Undergraduate Cyber Training, and found that SDI responses on agreeableness, neuroticism, and conscientiousness were predictors of the final grade airmen obtained in the course (Manley, Schwartz, and Weissmuller, 2016).²¹

Basic Requirements

Potential officers and enlisted personnel must have no reported alcohol dependence or drug abuse, must have no prohibited law violations or moral conduct offenses, and must meet the Air Force's physical requirements. In screening for these requirements, the Air Force has an opportunity to make general assessments about the attributes of individuals.

Fitness Standards

The Air Force uses a tiered model to determine fitness standards and requirements. In 2010, the Air Force implemented the current Tier I fitness standards, which are based on age and gender and include a 1.5-mile run, push-ups, sit-ups, and an abdominal circumference measure. These standards are intended to promote good health and an “overall fitness culture within the Air Force” (Robson et al., 2017, p. x). The standards apply to enlisted airmen and officers, although they are not always used as a way to screen individuals (Robson et al., 2017). Fitness standards are evaluated during the recruiting processes in various ways; recruiters encourage enlisted personnel in the DEP to maintain physical fitness, while AFROTC and USAFA include fitness assessments as part of the application procedures. However, meeting physical fitness standards is an integral part of BMT for enlisted airmen and in all officer pathways.

In contrast, Tier II fitness standards are intended to promote physical readiness and are required only for physically demanding AFSCs (Robson et al., 2017, p. 46). These standards do not vary by gender or age and are very clearly defined. For example, recruits who are interested in special warfare career fields take the Physical Ability and Stamina Test (PAST), a physical test that includes a 20-meter underwater swim, a 1.5-mile run, and push-ups (U.S. Air Force, 2010).

²¹ We also heard this in a subject-matter expert discussion on August 21, 2019.

Drug and Alcohol Abuse and Criminal and Legal History

All Air Force personnel, including officers, must complete Air Force Form 2030, on which they are required to list their drug and alcohol history, including experimentation with marijuana, possession of illegal drugs, and history with treatment or rehabilitation (Air Force Form 2030, 2017). Generally, the Air Force disqualifies individuals with a history of substance abuse, although individuals who experimented with marijuana generally will not be disqualified, as long as such experimentation did not end in legal proceedings (U.S. Air Force, undated-c). Similarly, almost all law violations are disqualifying, except small numbers of traffic violations. The Air Force requires individuals to complete Standard Form 86, *Questionnaire for National Security Positions*, to start their background investigations (U.S. Office of Personnel Management, 2016). The Air Force also might consider other law violations on a case-by-case basis (U.S. Air Force, undated-c).

Marketing

A candidate airman's interaction with the U.S. Air Force often begins with exposure to a marketing campaign; this is true for both enlisted and officer candidates. DoD is the United States' largest employer, and the Air Force accounts for a considerable share of these individuals. Therefore, marketing and advertising are necessary to ensure that the Air Force is able to access sufficient officers and enlisted personnel to meet congressionally mandated end strength targets. With a relatively small portion of the U.S. population qualified and inclined to serve in the military, meeting recruiting goals is a perennial challenge.²² Efforts to market for particular attributes could deter otherwise qualified individuals from considering joining the Air Force. Thus, the use of targeted marketing must be carefully weighed against current Air Force manpower requirements.

If the Air Force chooses to include particular attributes in its marketing campaigns, it will need to be careful that such efforts do not conflict with ongoing marketing efforts that emphasize self-improvement and opportunities for professional development. As we heard from leadership in the Air Force Recruiting Service, such campaigns as AIM HIGH! offer individuals a chance to make the most of military service and opportunities in the Air Force regardless of their civilian backgrounds (U.S. Air Force, 2014b).

Nevertheless, although the Air Force seeks to target a wide audience, it conducts more-targeted marketing efforts designed to showcase the unique aspects of the service that might be attractive to individuals who are inclined to serve in the military. For example, compared with other services, the Air Force often markets itself as a better fit for individuals who might be technically inclined or who have science, technology, engineering, and mathematics (STEM) backgrounds (National Research Council, 2003). The Air Force also conducts more-niche

²² This information was provided in a subject-matter expert discussion on June 26, 2019.

marketing efforts through advertising that attempts to target certain types of individuals.²³ For example, a commercial for USAFA tries to appeal to individuals who have grit (U.S. Air Force and Space Force Recruiting, 2018); in another commercial, the Air Force features pararescue duties (U.S. Air Force and Space Force Recruiting, 2016).

As of this writing, the Air Force does not feature any marketing campaigns targeted toward joint duty participation.²⁴ Because the Air Force must strike a careful balance between casting a wide net and highlighting what makes the service unique, it could be difficult to market to individuals who are interested in joint environments. Marketing experts would need to carefully consider how to portray joint activities—such as airmen working alongside sister services—in ways that highlight what makes the Air Force, rather than another service, a good option for some individuals.

Summary of Recruiting and Assessment Practices

In Table 3.1, we provide a summary of opportunities to assess attributes across the pathways we discussed in this chapter. (We provide more detail on the specific dimensions for which each of these assessments screens in Appendix B.) In the table, an “X” indicates that the method is used for a particular entrance pathway and could be used to assess attributes. The table is not an exhaustive list of all of the requirements that are necessary to join the Air Force or all of the opportunities to assess attributes; it is illustrative of the variety of options available. These assessment tools generally fall into the following six categories, according to how they are currently used:

1. **cognitive assessments:** These are an important screening tool for both enlisted airmen and officers. The ASVAB and AFOQT are used to determine general eligibility for the Air Force and suitability for certain AFSCs, while SAT/ACT scores are used as admissions criteria for AFROTC and USAFA.
2. **personality assessments:** The Air Force uses two personality assessments—TAPAS for enlisted airmen and the SDI for officers. Nearly all enlisted airmen and OTS candidates take the SDI or TAPAS. The Air Force uses the SDI to determine eligibility for certain career fields and in OTS selection board decisions. The Air Force uses both in rare circumstances.
3. **interviews and conversations:** The Air Force uses interviews only for evaluation purposes for officer candidates. Although enlisted airmen will talk with recruiters throughout the recruitment process, these conversations are generally nonevaluative.
4. **academic and professional background:** The Air Force uses academic and professional background information in officer decisions, but this information is generally not required for enlisted airmen.

²³ The advertising agency GSD&M handles advertising and events related to Air Force recruiting through a \$741 million contract through 2027 (Oster, 2018). Through this contract and through advertising efforts, the Air Force attempts to target certain types of individuals.

²⁴ This information was provided in a subject-matter expert discussion on June 26, 2019.

5. **other:** The Air Force uses several other assessments and requirements that are unique to specific groups of potential candidates. USAFA requires a congressional or vice-presidential nomination, depending on the nominating body.²⁵ The Air Force requires performance evaluations for current enlisted personnel who are applying for OTS or AFROTC.
6. **Air Force–wide requirements:** The Air Force requires that all candidates meet fitness standards, report all law violations and criminal history, and report all drug and alcohol abuse. These standards are common across all entry points, although the screening process might vary across pathways.

Although assessing for attributes is not the primary use of the assessment options shown in Table 3.1, all could have applicability to assessing for attributes, as we discuss in further detail in Chapter 5. Before turning to that topic, we explore the types of attributes that indicate joint potential.

²⁵ USAFA also reserves several cadet appointments for the following types of nominations: military-affiliated, for individuals residing in U.S. territories, and for individuals nominated by a country other than the United States.

Table 3.1. Opportunities to Assess Attributes Across Pathways

Category	Method	Enlisted	OTS-Civilian	OTS-Enlisted	AFROTC-HSSP	AFROTC-ICSP ^a	AFROTC-AECP	USAFA
Cognitive assessments	ASVAB	X	–	–	–	–	–	–
	AFOQT ^b	–	X	X	–	–	–	–
	SAT/ACT scores	–	–	–	X	X	–	X
Personality assessments	TAPAS	X	–	–	–	–	–	–
	SDI ^b	–	X	X	–	–	–	–
Interviews and conversations	Recruiter conversations	X	X	–	–	–	–	–
	Candidate or admissions interview	–	X	X	X	X	X	X
Academic and professional background	Letters of recommendation	–	–	X	–	–	X	X
	GPA, transcript, accomplishments	–	X	X	X	X	X	X
	Writing sample	–	–	–	–	–	–	X
	Extracurricular and employment history	–	X	X	–	–	–	X
Other	Official nomination	–	–	–	–	–	–	X
	Performance evaluations	–	–	X	–	–	X	–
Air Force–wide requirements	Fitness standards	X	X	X	X	X	X	X
	Criminal record and law violation requirements	X	X	X	X	X	X	X
	U.S. Air Force Drug and Alcohol Abuse Certificate (Air Force Form 2030)	X	X	X	X	X	X	X

SOURCES: Information for enlisted personnel is from Air Force Instruction 36-2002, 2018. Information on TAPAS is from Drasgow, 2013; Drasgow et al., 2012; Lytell et al., 2018; and Stark et al., 2014. Information for OTS is from Air Force Form 56, 2006; Air Force Instruction 36-2005, 2018; and U.S. Air Force, undated-d. Information for AFROTC is from AFROTC Instruction 36-2011, 2018; and AFROTC, undated. Information for USAFA is from Air Force Instruction 36-2019, 2018; Hardison, Burkhauser, and Hanser, 2016; and USAFA, undated.

NOTES: An “X” means that the method is used for a particular entrance pathway.

^a The AFROTC-ICSP (current college student) application process is detachment-specific. Therefore, it is likely that most students submit admissions materials, such as academic background and SAT/ACT scores, as part of the application.

^b AFROTC and USAFA cadets typically take the AFOQT during their sophomore year of college, but it is not used as an admissions requirement for AFROTC or USAFA. The SDI is a subtest of the AFOQT.

Chapter 4. Identifying Attributes That Might Indicate Joint Potential

Employers in the private sector use a variety of approaches to assess a job candidate's potential for success, including tests that assess an individual's knowledge and skills (e.g., to measure proficiency), ability tests (e.g., cognitive or psychomotor ability), personality tests, emotional intelligence tests, integrity tests (e.g., attitudes, prior behaviors, specific personality traits), and vocational interest tests (Spector, 2012). As we discussed in previous chapters, our focus was to identify attributes that might signal the potential for success in joint roles and that could be used to assess Air Force recruits at the time of entry into the service. To do so, we began by defining the term *attribute* and then identified relevant attributes for the Air Force. In this chapter, we describe our approach.

Defining *Attribute*

The term *attribute* is widely used in academic literature, yet because of the ubiquity and varied use of this term, there is no single agreed-upon definition. We undertook a literature review of academic journal articles, previous RAND Corporation reports on related topics for the Air Force and for other branches of the military, and practitioner texts in the fields of industrial organizational psychology and human resource management to assess how *attribute* and related terms have been defined.

Because RAND researchers have done previous work on the malleability of attributes for military organizations, we started our literature search there. We collected relevant RAND reports focused on attributes, along with primary sources used in these reports. We also conducted a series of literature searches in such databases as Web of Science (for a broad look at social science research), PsycINFO (for psychological sources), and Business Source Complete (for talent management and human resources literature). We conducted various database searches by searching for key terms within abstracts, such as “attribute,” and combinations of such terms as “attribute” and “malleab*” or “stability” or “stable” (and other synonyms) as a way to examine content that directly addressed attributes of an individual and the degree to which attributes can be developed or changed. We also reviewed textbooks and handbooks in related areas for definitions of *attribute* and other terms.

The goal of this review was to synthesize different conceptualizations of the term to develop a composite definition that is appropriate to the Air Force context of this research. Using this literature review, we developed the following definition:

An *attribute* is a characteristic, quality, or feature of an individual. Attributes include

- adjectives that are used to describe an individual (e.g., trustworthy)
- nouns that refer to a quality an individual possesses (e.g., honesty, curiosity, self-control)
- verb phrases that refer to the way an individual is (e.g., calm under pressure).

As the Air Force Flight Plan description of *attribute* indicates, some attributes are considered to be stable or inherent to the individual (e.g., such demographic traits as age, gender, ethnicity, or certain personality traits) (Pelled, Eisenhardt, and Xin, 1999; Saltzman, and the Air Force Strategic Integration Group, 2018).²⁶ Other types of attributes are considered alterable but still intrinsic to the individual (e.g., physical fitness) (Pelled, Eisenhardt, and Xin, 1999).

When considering the role of attributes in relation to recruiting and accession, it is helpful to distinguish attributes from related terms. Many terms used to describe individuals overlap; some terms are synonymous, and others have fine definitional differences or are commonly grouped together. For example, when individuals are recruited for a prospective position, most organizations review a combination of factors, including KSAOs or attributes (Spector, 2012). Therefore, a person's attributes are one crucial piece of data for recruitment processes and accession programs in most types of organizations. In Appendix A, we define several related terms to provide a way to contrast *attributes* with other related concepts.

Method for Identifying Attributes

Using our definition of *attribute*, we conducted an adapted job analysis to identify specific attributes that might better enable prospective airmen to excel in joint environments. Typically, a job analysis involves “gathering, examining and interpreting data about a job's tasks and responsibilities” (Society of Human Resources Management, undated).²⁷ Because the Air Force wants all airmen to have the ability to contribute in a joint environment and because joint duty involves so many types of jobs, it was not feasible to examine all of the job descriptions to determine what attributes prospective airmen would need. Rather than examining one or a handful of specific job descriptions, we examined joint development requirements articulated in Air Force and Joint Staff documents that would likely be applicable to a large number of joint jobs.

This focus on documented statements of requirements has a couple of advantages. First, it allowed us to consider the largest number of joint activities when developing a list of attributes. Second, by focusing on requirements, which have been vetted by the Joint Staff or Air Staff, the Air Force can get a sense of the ideal attributes that are required for airmen in joint

²⁶ Early versions of the Flight Plan defined *attribute* as “inherent elements of character obtained through experience” (Department of the Air Force, 2017, p. 136). We took “inherent elements of character” into consideration in developing our definition of *attribute*.

²⁷ For an additional discussion of job analysis as a method, see Harvey, 1991.

environments. The completed vetting and endorsement by these organizations means that these requirements reflect the accepted standards to which airmen should be held.

One challenge related to the use of existing joint development guidance was that these documents did not simply list desired attributes; they contained paragraphs, phrases, or terms that touched on attributes, knowledge, experience, and skills. In some instances, key terms were not defined. Additionally, across the source documents, the lists of requirements were not consistent, which meant that no one set of attributes (or other KSAOs) emerged. Because of these challenges, additional analysis was needed to use these data sources to identify attributes that were appropriate for our purposes.

To resolve these challenges, we developed a systematic, five-step approach for deconstructing joint requirements into relevant attributes.

Step 1: Identify Official Joint Development Guidance

We identified official joint and Air Force documents that describe the required characteristics of individuals working in a joint environment. For example, the CJCSI governing officer professional military education lists six Desired Leader Attributes (DLAs) that are considered to be universal attributes that are “fundamental to Joint Leader Development” (CJCSI 1800.01E, 2019, p. A-2).

We used the following documents in our analysis:

- CJCSI 1800.01E, *Officer Professional Military Education Policy*, 2015, updated 2019
- CJCSI 1805.01B, *Enlisted Professional Military Education Policy*, 2015
- Joint Publication 1, *Doctrine for the Armed Forces of the United States*, 2017
- Joint Publication 3-0, *Joint Operations*, 2018
- Joint Staff J-7, *Joint Officer Handbook*, 2011
- FA-2: Joint Warfighter, Interview Data Summary
- *Strengthening Joint Leaders and Teams Flight Plan* (Saltzman and the Air Force Strategic Integration Group, 2018).

Step 2: Identify Joint Development Requirements

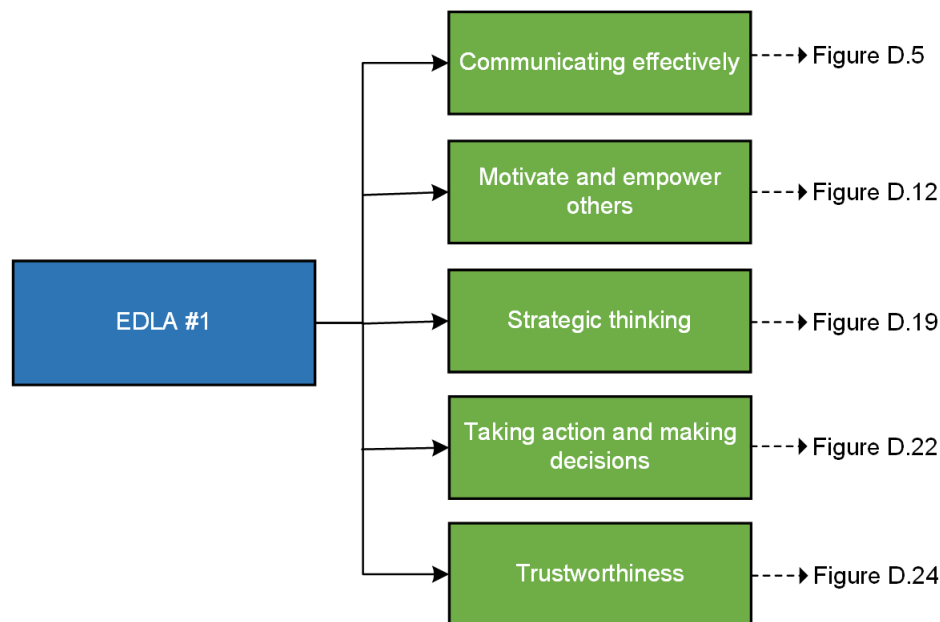
From the guidance documents, we identified joint development requirements. These requirements were frequently broadly descriptive and did not identify specific attributes pertaining to individuals. In many instances, joint development requirements were lengthy statements that included a mix of knowledge, skills, abilities, and attributes. For example, CJCSI 1805.01B lists six Enlisted Desired Leader Attributes (EDLAs). The first required EDLA calls for “[t]he ability to operate on commander’s intent and enable mission command at all levels,” which implies many attributes (CJCSI 1805.01B, 2015, p. A-1). Thus, we developed a way to identify attributes from these requirements, which we explain in Steps 3 and 4.

Step 3: Identify Constituent Constructs

After developing the list of joint development requirements, we parsed each requirement into discrete parts, which we refer to as *constituent constructs*—terms that together constitute a given joint development requirement. For example, Figure 4.1 illustrates the initial deconstruction for EDLA 1, which broke down into five distinct constituent constructs: communicating effectively, motivate and empower others, strategic thinking, taking action and making decisions, and trustworthiness. Each of these constructs is inherent to the requirements of operating under mission command described in joint doctrine (Joint Publication 1, 2017, p. V-15). Appendix C in the appendixes report contains comprehensive results from this step for all 60 requirements.

We identified some constituent constructs that fit the definition of *attribute*—a characteristic, quality, or feature of an individual—while others, such as EDLA 1, represented broader concepts that required further deconstruction to parse out relevant attributes, which we describe in Step 4 in the next subsection. Throughout this process, we recognized that knowledge and experience, although they are not attributes or constructs, are pervasive throughout the joint requirements. Because of this and because our focus was on individual attributes at the time of accession rather than on such developmental factors as airman training and career experience, knowledge and experience are not included in our deconstructions.

Figure 4.1. Initial Deconstruction of EDLA 1: Operate Under Mission Command



NOTE: This figure appears as Figure C.7 in Appendix C in the separate appendix to this report with additional explanatory details. The blue rectangle represents the joint requirement, and the green rectangles represent its constituent constructs. The references to figures in Appendix D in the separate appendix specify where the reader can find the deconstruction of these constructs.

We used three types of sources to inform this deconstruction process: (1) U.S. military doctrine and official guidance, including DoD, joint, and Air Force publications; (2) academic literature that discusses how individual abilities and attributes relate to job performance in military settings; and (3) academic literature that discusses how individual abilities and attributes relate to job performance in the private sector and other professional settings.

In conducting the literature review, we developed a library of sources for each of these categories. Team members reviewed military guidance and peer-reviewed academic literature for evidence of connections among requirements, constructs, and attributes. Where possible, we provided a literature-derived justification for the connections. When this was not possible because of gaps or inconsistencies in the literature, we used professional judgment to resolve inconsistencies and make connections that best reflected a military context. In the appendixes, we show all of the connections and their justifications (and citations, when available) so that, in the future, additional constructs or attributes can be added or connections can be updated.

Step 4: Break Down Constructs into Their Component Attributes

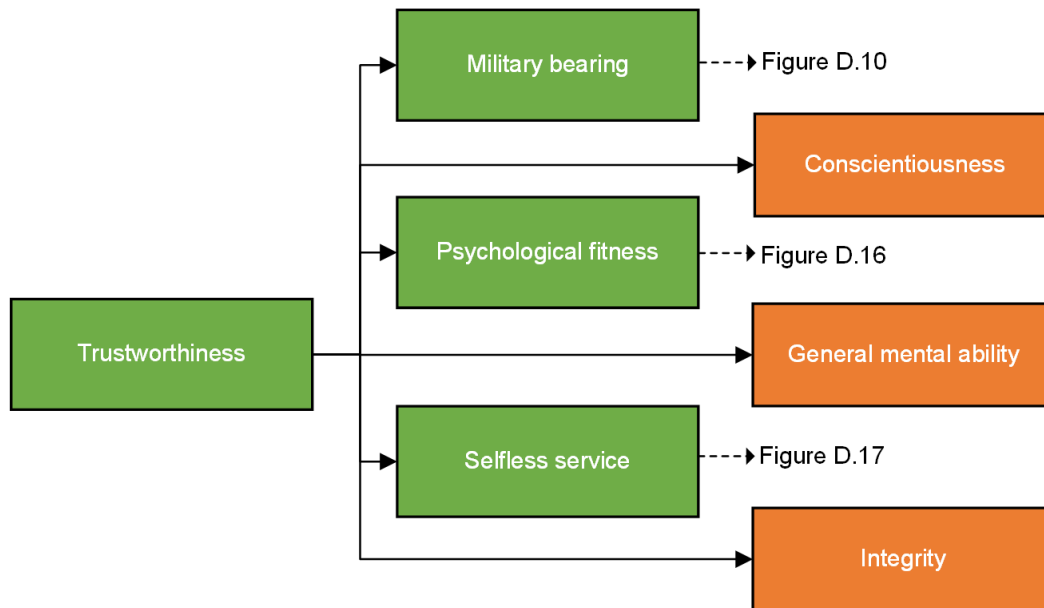
The fourth step involved parsing constituent constructs further into the attributes that pertain to a given construct. The goal of this step was to produce a complete list of relevant attributes—which an airman poised to succeed in joint environments theoretically should have—that could be traced back to their source requirements. As in Step 3, we used literature where available to define and deconstruct the constituent constructs. Using our literature review, we found definitions that allowed us to break down a constituent construct into other constituent constructs or terms that fit our definition of *attribute*.

We ended the process when continuing the deconstruction would not provide consistent lower-level attributes or when we found nothing in the literature that further broke down an attribute. Attributes were treated as the foundational building blocks and, thus, were the end points of the deconstruction process. It is worth noting that we designed this approach to be as systematic as possible while allowing for the possibility that there could be different ways to break down a construct. Later in this chapter, we provide more-specific information about our approach to thinking through the reliability and validity of our method.

For example, for EDLA 1 (shown in Figure 4.1), the five constituent constructs identified in the initial deconstruction were themselves parsed into constituent parts. Figure 4.2 illustrates how one of these constructs, trustworthiness, was deconstructed into three constituent constructs (military bearing, psychological fitness, and selfless service) and three constituent attributes (conscientiousness, general mental ability, and integrity).²⁸

²⁸ *Trustworthiness* is defined as “worthy of confidence; dependable” (Merriam-Webster, undated-b).

Figure 4.2. Deconstruction of the Trustworthiness Construct

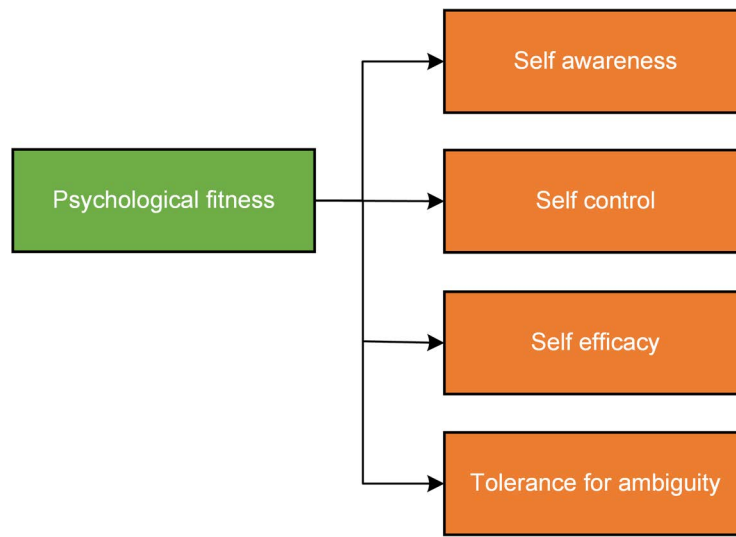


NOTE: This figure also appears as Figure D.24 in Appendix D in the separate appendix to this report with additional explanatory details. Green rectangles represent constructs, and orange rectangles represent attributes. The references to figures in Appendix D in the separate appendix specify where the reader can find the deconstruction of these constructs.

Each of the newly uncovered constructs was deconstructed in turn until the deconstruction resulted only in attributes. For example, psychological fitness was identified as a constituent construct of trustworthiness and was itself deconstructed into four attributes: self-awareness, self-control, self-efficacy, and tolerance for ambiguity, as shown in Figure 4.3.²⁹ This particular deconstruction ends with four attributes. Had any additional constructs been identified in Figure 4.3, they also would have been deconstructed. Appendix D in the separate appendix contains all deconstructions from constructs to attributes that resulted from this step.

²⁹ *Psychological fitness* is defined as follows: “Psychological fitness includes the integration and optimization of mental, emotional, and behavioral abilities and capacities to optimize performance and strengthen resilience. It describes a Service member’s ability to effectively cope with the unique mental stresses and challenges of Military Service” (CJCSI 3405.01, 2013, p. A-F-1).

Figure 4.3. Deconstruction of the Psychological Fitness Construct



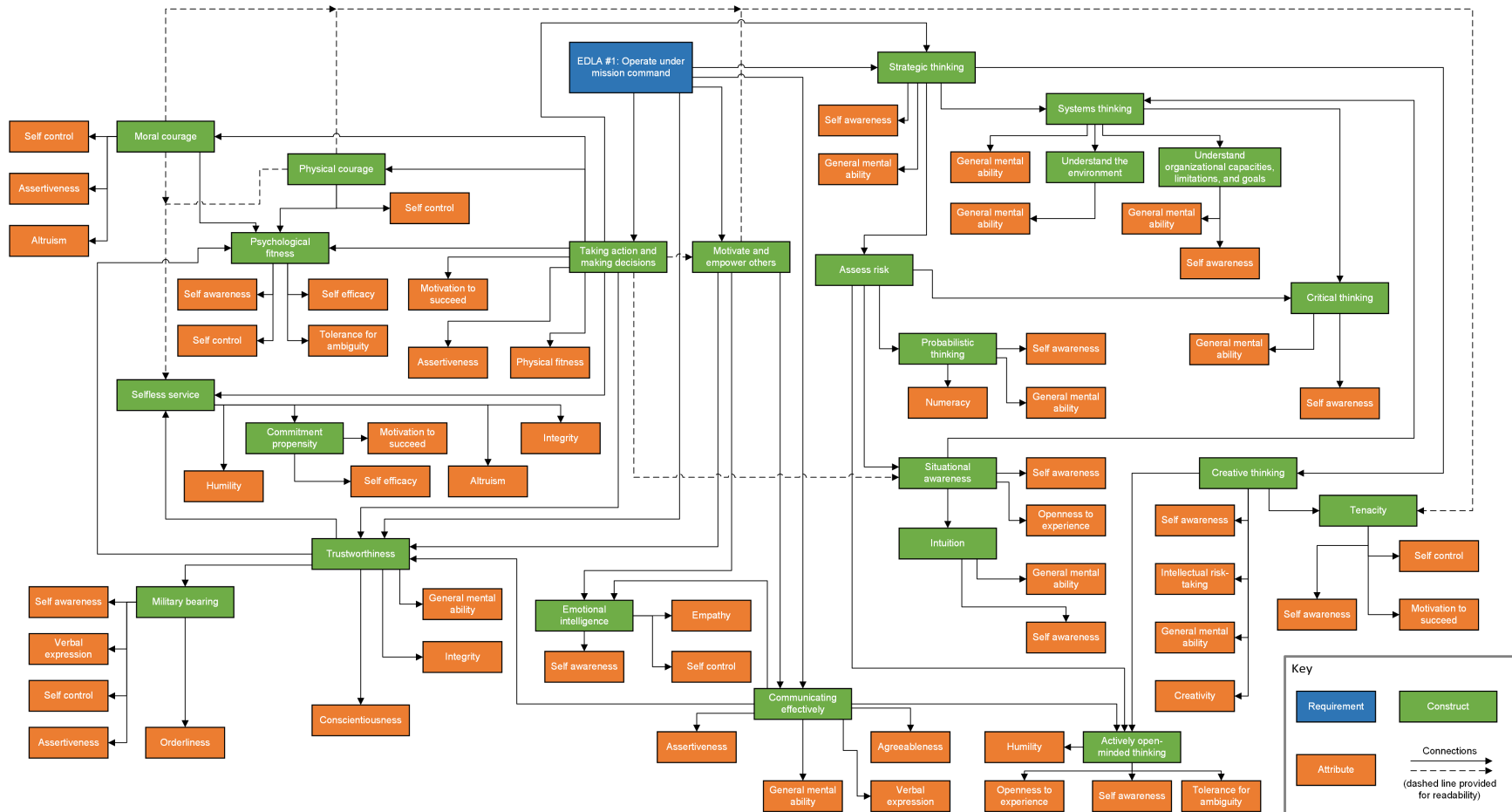
NOTE: This figure also appears as Figure D.16 in Appendix D in the separate appendix to this report. Green rectangles represent constructs, and orange rectangles represent attributes.

The result of this multistep deconstruction method is a map that connects the joint requirement (e.g., EDLA 1) to attributes through a process of deconstructing layers of constituent constructs until, eventually, all constructs have been deconstructed to attributes. The full deconstruction map for EDLA 1 is shown in Figure 4.4. It is not surprising that this EDLA can be deconstructed into so many constituent parts because it represents a high-level requirement encompassing all aspects of operating under mission command. We identified 21 attributes related to EDLA 1.

It is notable that attributes were not mutually exclusive to a given construct. For example, self-awareness was an attribute of both actively open-minded thinking and critical thinking. Likewise, constituent constructs sometimes pertained to more than one joint requirement. For example, the construct communicating effectively (which is officially defined as “the ability to anticipate, communicate, and mitigate risks”³⁰) was identified as part of both EDLA 1 and EDLA 4, along with many other joint requirements.

³⁰ The six EDLAs are described in CJCSI 1805.01B, 2015, p. A-1.

Figure 4.4. Full Deconstruction Map for EDLA 1



NOTE: This figure is a composite of the initial EDLA 1 deconstruction shown in Figure 4.1 and all of the relevant construct deconstruction figures shown in Appendix D in the separate appendix to this report. This figure is primarily meant to convey the size of the full deconstruction map. For ease of visualization, attributes that appear at the ends of multiple deconstruction paths are depicted in separate orange boxes for each such appearance in this diagram, even though they are all identical instances of the same attribute. The alternative network diagram, depicting each attribute as a single orange box with multiple lines leading to it from all over the figure, would be confusing to depict fully for such a complex requirement as EDLA 1. See Figure 5.1 for an example of such a network diagram, albeit one depicting a simpler deconstruction of a joint requirement.

A next logical step might be to determine whether any one attribute was more or less essential to a constituent construct (such as whether self-control or tolerance for ambiguity was a more important part of psychological fitness). However, we did not make this assessment because the literature on attributes is vast and far too imprecise for us to make such judgment calls. Most of the research in our sample focused on behavioral or attitudinal analyses rather than on conceptual breakdowns, and even sources that focused on defining concepts, such as textbooks, did not address this type of question in detail. Additionally, the aim of this report is to identify attributes, not to rank or rate them, so such a task might be a rich endeavor for future research.

For this deconstruction method to be systematic, we had to gauge validity and reliability to the extent possible.³¹ In addition to establishing a corpus of documents relevant to joint requirements and joint development in an Air Force context, the extensive use of literature, including the use of shared libraries of sources, represented a deliberate attempt to establish the internal validity of this method.³²

Although our method, described in Steps 1–4, was systematic, there was still subjective judgment involved in identifying and bounding constructs. We found that the deconstruction method allowed researchers to arrive at similar, although not always identical, results but through different pathways. For instance, one researcher could arrive at systems thinking while another could describe a similar term, such as complex thinking, in reference to the same requirement. To address this challenge, we took several steps to develop and codify this deconstruction method to make it as consistent as possible. Researchers conducted practice deconstruction exercises by parsing a set of the same requirements. This exercise was a way to determine the extent to which the different researchers arrived at the same or similar results when analyzing the same data.³³

After this initial phase of practice deconstruction exercises, researchers developed a detailed guidance document describing steps to be taken to apply the method as systematically as possible while recording such data as source names and term definitions. The deconstruction of each of the 60 joint requirements, including definitions and the justifications and sources used to identify

³¹ *Validity* is “the extent to which an empirical measure adequately reflects the real meaning of the concept under consideration” (Babbie, 2010, p. 153). *Reliability* refers to “whether a particular technique, applied repeatedly to the same object, yields the same result each time” (Babbie, 2010, p. 150). Our method for deconstructing requirements is systematic while allowing researchers to take different paths to move from source material to a core list of attributes.

³² In brief, *internal validity* means that one measures what one intended to measure. More precisely, it is “approximate validity with which one infers that a relationship between two variables is causal or that the absence of a relationship implies the absence of cause” (Lavrakas, 2008, p. 346).

³³ Although we considered applying an intercoder reliability statistical analysis to assess reliability (for example, double-coding a subset of data and running a reliability statistic), the exploratory nature of this deconstruction exercise, along with the central role of multiple literature reviews in this approach, made a statistical reliability test unwieldy. Instead, we took several steps, which we document in this chapter, to systematize and reflect on the deconstruction process as much as possible.

requirement components, is provided in Appendix C, in the separate appendix to this report. Deconstructions and related information for each of the constructs used in our analysis are provided in Appendix D in the separate appendix to this report.

Once all steps in this method were documented, tested, and refined, two researchers used these guidance documents to deconstruct the entire data set (i.e., all the requirements from the source documents). Then, two additional researchers examined those results independently, focusing on the validity of constituent constructs in relation to the attributes derived from them.

Step 5: Seek External Verification

To assess the degree to which our method and results resonated among staff in the Air Force, we conducted two verification sessions with Air Force staff affiliated with SJLT research.³⁴ A total of 12 Air Force subject-matter experts participated in these sessions. These sessions were a form of *member checking*, which means

taking data and interpretations back to the participants in the study so that they can confirm the credibility of the information and narrative account. With the lens focused on participants, the researchers systematically check the data and the narrative account (Creswell and Miller, 2000, p. 127).

Member checking was a way to assess the extent to which the method made sense to Air Force stakeholders, some of whom would use the results from this study in their own work, and the extent to which the list of attributes resonated with those deeply involved in Air Force recruitment and accessions.

In these sessions, after introducing the project and project goals to the participants, we walked through a sample requirement deconstruction exercise. We then asked participants to deconstruct a few constituent constructs (for example, selfless service, trustworthiness, or strategic thinking). We kept the participants' experience in Air Force recruiting and accessions in mind as we led them through a discussion on how they would deconstruct these example constructs and identify the resulting attributes. We did not provide participants with the PAF team's version of the deconstruction; instead, we wanted to see how these groups would arrive at their own results.

These sessions allowed rich discussion and debate; for example, questions arose about the extent to which attributes related to success in a joint environment compared with attributes related to all airmen and about the role that organizational culture and training play in developing certain attributes. In both member-checking sessions, terms that emerged from participants were, for the most part, analogous to the attributes we derived through the formal method. In some instances, terms were identical; in other instances, terms were similar (e.g., *perseverance* and

³⁴ One session was conducted in Washington, D.C., and one in San Antonio, Texas, with individuals who were involved with emphasizing joint development for the Air Force or who were involved with policy and processes related to Air Force recruiting, accessions, training, and development. Groups included both military and civilian personnel. To protect participants' anonymity, we do not refer to any identifying information, such as job titles.

tenacity). In a few instances, we refined some of our deconstruction results based on discussions with participants so that they better fit the Air Force context.

Notably, these member-checking exercises were not designed to quantitatively verify all results (e.g., to assess a percentage of overlap between participants' list of attributes and those from the researchers). Nor did we have time to ask each participant to deconstruct every constituent construct or every requirement (a process that took months to complete). Instead, this process gave an opportunity to determine whether this method and resulting attributes were consistent with the perspectives of Air Force subject-matter experts after scrutiny by those in the field.

Attributes Identified Using This Methodology

Our deconstruction method resulted in a list of 22 attributes, which we define in Table 4.1. Although we attempted to identify a distinct list of attributes from the initial set of joint development requirements, we recognize that some attributes might partially overlap or correlate with one another in different ways. Likewise, we are aware that it is possible that the presence of one attribute could make another attribute more or less likely; for example, an airman assessed as having a very high level of *agreeableness* would be unlikely to also have a very high level of *assertiveness*. Or an airman deemed to have a high level of *openness to experience* might be more likely to also score high on *creativity*. These questions of potential correlation or influence among attributes should be taken into consideration in any future research on assessment tools and procedures.

In the next chapter, we examine dimensions of these attributes, in particular their prominence across joint development requirements as a whole; their relative stability or malleability; current Air Force practices, including available tools to screen or assess attributes; other tools for potential use; and whether the attributes align with Air Force foundational competencies.

Table 4.1. Final List of Attributes

Attribute	Definition
Agreeableness	“Tendency to act in a cooperative, unselfish manner” (American Psychological Association, undated); or “traits associated with [agreeableness] include being courteous, flexible, trusting, good-natured, cooperative, forgiving, soft-hearted, and tolerant” (Barrick and Mount, 1991, p. 4)
Altruism	Having an unselfish concern for others’ welfare, as shown through generosity, consideration of others, and a willingness to assist others in need of help (adapted from American Psychological Association, undated)
Assertiveness	Directly speaking up, even in situations in which one’s “positions and/or interests are, or could be, in conflict with others’ positions or interests” (Ames, 2009, p. 112)
Conscientiousness	“Conscientiousness reflects dependability; that is, being careful, thorough, responsible, organized, and planful” (Barrick and Mount, 1991, p. 4).
Creativity	“The ability to produce or develop original work, theories, techniques or thoughts” (American Psychological Association, undated)
Empathy	“Understanding a person from his or her frame of reference rather than one’s own, or vicariously experiencing that person’s feelings, perceptions, and thoughts” (American Psychological Association, undated)
General mental ability ^a	Analogous to <i>intelligence</i> , <i>general mental ability</i> is “the ability to derive information, learn from experience, adapt to the environment, understand, and correctly utilize thought and reason” (American Psychological Association, undated).
Humility	“The quality of being humble, characterized by a low focus on the self, an accurate (not over- or underestimated) sense of one’s accomplishments and worth, and an acknowledgment of one’s limitations, imperfections, mistakes, [and] gaps in knowledge” (American Psychological Association, undated)
Integrity	“The quality of moral consistency, honesty, and truthfulness with oneself and others” (American Psychological Association, undated)
Intellectual risk-taking	The “impulse to find and try original ideas, to go beyond one’s familiar boundaries of knowledge and explore new possibilities rather than staying in the relative security of what [one already knows]. The risk is that the ideas will be deemed impractical, inappropriate, [or] crazy” (Byron, 2006, p. 2).
Motivation to learn	The impetus driving pursuit of mastery of a task or subject matter, driven by desire for learning rather than for demonstration of competency (adapted from Dweck, 1986)
Motivation to succeed	The “desire to prove one’s competence and to gain favorable judgments about it” and the desire to achieve a high level of performance (Vandewalle, 1997, p. 1000)
Numeracy	“The ability to understand and work with numbers” (Oxford English Dictionary, undated)
Openness to experience	The “tendency to be open to new aesthetic, cultural, or intellectual experiences” (American Psychological Association, undated)
Orderliness	The “tendency to be neat and tidy and to keep everything in place” (American Psychological Association, undated)
Physical fitness	The “ability to physically accomplish all aspects of the mission while remaining healthy and uninjured” (CJCSI 3405.01, 2013, p. A-1)
Self-awareness	<i>Self-awareness</i> is the extent to which people are consciously aware of their interactions or relationships with others and of their internal states (adapted from Trudeau and Reich, 1995).

Attribute	Definition
Self-control	<i>Self-control</i> is “the capacity to regulate attention, emotion, and behavior in the presence of temptation” (Duckworth and Gross, 2014, p. 1). Self-control is especially focused on meeting “standards such as ideals, values, morals, and social expectations, and to support the pursuit of long-term goals” (Baumeister, Vohs, and Tice, 2007, p. 351).
Self-efficacy	“People’s judgments of their capabilities to organize and execute courses of action required to attain designated types of performances” (Bandura, 1986, p. 391)
Spatial awareness	“The skill required to orient or perceive one’s body in space or to detect or reason about relationships within or between objects in space” (definition is for <i>spatial ability</i> in American Psychological Association, undated)
Tolerance for ambiguity	“The degree to which one is able to accept, and to function without distress or disorientation in, situations having conflicting or multiple interpretations or outcomes” (definition is for <i>ambiguity tolerance</i> in American Psychological Association, undated)
Verbal expression	Analogous to the productive abilities (fluency) component of overall <i>verbal ability</i> , <i>verbal expression</i> is “demonstrated skill to . . . communicate effectively with words” (American Psychological Association, undated).

^a Although general mental ability can be considered a high-level construct, in literature (e.g., Straus et al., 2018) it is often treated as an attribute, albeit with a distinction between fluid (stable) and crystallized (malleable or developable) intelligence. See Appendix F in the separate appendix for more on general mental ability.

Chapter 5. Opportunities to Assess Attributes During Recruitment and Accession

In Chapter 3, we described current Air Force recruiting and accession practices and identified opportunities to screen for attributes that might signal joint potential, should the Air Force choose to do so. The method we discussed in Chapter 4 that derived such attributes from service and joint documentation resulted in a list of 22 attributes that met our criteria. But how should the Air Force use this list? Are some of these attributes more appropriate for early career assessment? Are some of the 22 attributes more prominently reflected in requirements? Do methods exist that might enhance the Air Force's ability to assess attributes? Furthermore, the Air Force has 22 foundational competencies related to the development of airmen; how do the 22 attributes compare with those competencies?

To answer these and other questions and to provide the Air Force with richer insight into how these attributes might be used, we assessed the identified attributes against a series of dimensions that enabled us to compare and contrast them in a way that highlights potential courses of action.

Description of Dimensions

We selected dimensions that the Air Force can use to make judgments about the relevance of a given attribute, determine whether the attribute can be developed, and consider whether investments in assessment tools or research would be useful. We identified the following five dimensions for this purpose:

1. proximity of attributes to a joint requirement in the deconstruction process
2. stability or malleability of attributes
3. current Air Force screening and assessment practices that could be applied to attributes
4. other existing tools that could be used to assess attributes
5. alignment of attributes with Air Force foundational competencies.

Proximity of Attributes to Joint Requirements

After identifying the 22 attributes, we assessed how prominently each attribute appeared in the deconstruction of each requirement.³⁵ To do this, we used a network analysis measure of proximity that quantifies how closely related each attribute is to a joint requirement of which it is a part. The proximity measure we used is the Cycle-Free Effective Conductance measure

³⁵ The figures in Appendix C in the separate appendix to this report provide information about the initial deconstruction of each requirement. Full deconstructions of requirements can be traced using Appendix C and Appendix D in the appendix to this report.

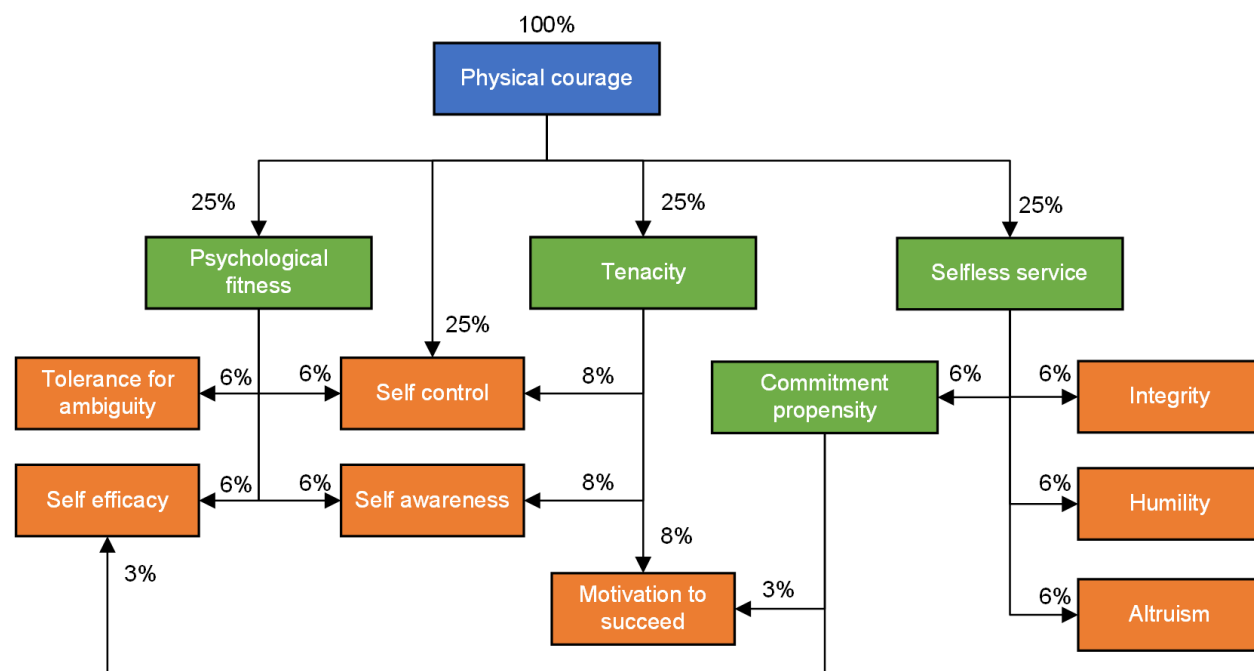
recommended by Koren, North, and Volinsky, 2007, because it reflects both the length and the number of possible paths connecting an attribute to a joint requirement.

Calculating the Proximity Measure

Proximity is modeled as a current (like electricity or water) that originates with the joint requirement and propagates outward along each possible deconstruction path. The current is divided into equal portions as it flows downward from the joint requirement to each of its component constructs and attributes and then from each construct to its subcomponents. Once the path reaches an attribute, it stops; the attributes are the end points of the deconstruction. Each attribute then receives an overall proximity value equal to the sum of all of the flows that reach it.

The example in Figure 5.1 shows how proximity values were calculated for each of the attributes that are part of the physical courage requirement derived from Joint Publication 1 (Joint Publication 1, 2017, p. B-2).³⁶

Figure 5.1. Calculating Attribute Proximity to the Physical Courage Joint Requirement



NOTE: Physical courage is a requirement found in Joint Publication 1, 2017. The blue rectangle represents the requirement, green rectangles represent constructs, and orange rectangles represent attributes.

The calculation process begins by assigning a value of 1.0, or 100 percent, to the current originating at the joint requirement itself (the blue rectangle in Figure 5.1). This current is then

³⁶ Also see Figures C.16 and D.14 in the separate appendix to this report.

divided equally among the requirement's components; in this case, each of the four components (psychological fitness, self-control, tenacity, and selfless service) receives a current with a proximity value of 25 percent. For each of the three component constructs (the green rectangles in Figure 5.1), this current again divides evenly as it flows down to its subcomponents. In the case of psychological fitness, the four subcomponents are each assigned a value that is one-quarter of 25 percent, or 6.25 percent. Similarly, the four subcomponents of selfless service each receive a value of 6.25 percent, while the three subcomponents of tenacity each receive a value of 8.33 percent. These figures are rounded to the nearest integer in Figure 5.1.

When an attribute appears along multiple deconstruction paths, its overall proximity value is the sum of all of the flows that reach it. For example, self-control, which appears as the end point of three different deconstruction paths in Figure 5.1, receives an overall proximity value of 39.6 percent (25 plus 6.3 plus 8.3). Self-awareness receives a value of 14.6 (6.3 plus 8.3). The proximity values of all eight of the attributes shown in Figure 5.1 sum to 100 percent, the same value as the flow that originated at the joint requirement. The 14 attributes that were not identified as components of the physical courage joint requirement are given a proximity value of zero for this requirement.

As is evident in this example, attributes that are only a single deconstruction step away from the joint requirement (e.g., self-control) are assigned higher proximity values, as are attributes that appear along more deconstruction paths (e.g., self-control and self-awareness). In addition, joint requirements or constructs with fewer subcomponents provide higher proximity values to each of those subcomponents compared with requirements or constructs that have many subcomponents. Thus, in Figure 5.1, motivation to succeed receives a higher proximity value than altruism because it shares the flow that reaches its parent construct with three fellow attributes rather than four.

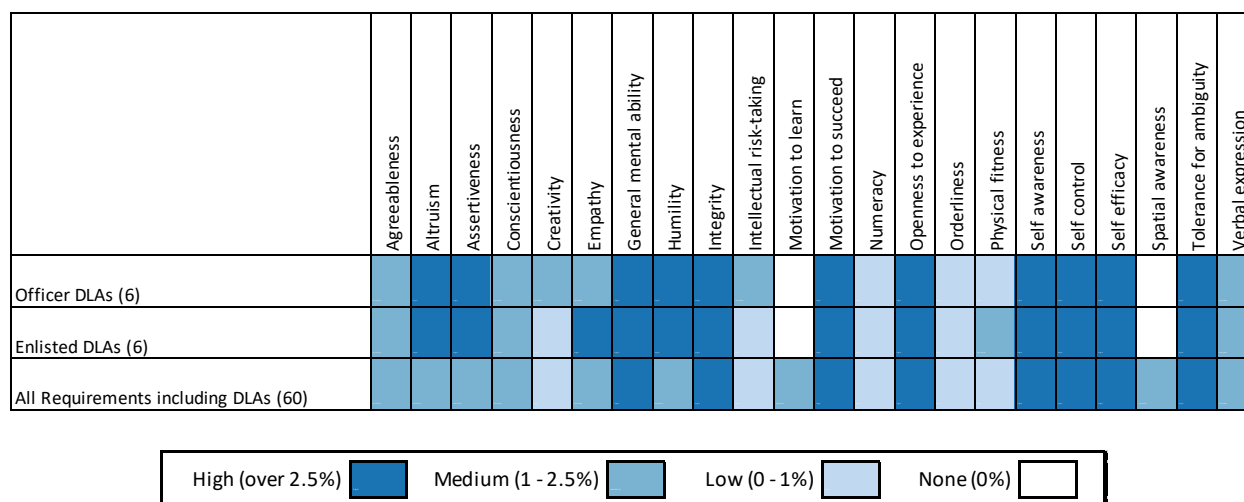
This measure, as calculated here, has two limitations. We assume not only that the subcomponents are equally important to the main construct but also that the subcomponents are not correlated. We used these initial assumptions to illustrate this measure because significant research—including further examination of the literature and/or surveys with Air Force subject-matter experts—that was beyond the scope of this study would be required to gather the information needed to vary the weights assigned to each element at each step of the deconstruction.

Using the Proximity Measure

Using this proximity measure, we can compare an attribute's relative prominence in different ways, such as for an individual requirement, for a discrete set of requirements, or across all requirements. For example, we can compare each attribute's prominence within the officer or enlisted DLAs by calculating attribute proximity to each of the six officer or enlisted DLA requirements and averaging the six resulting values for each attribute, as shown in Figure 5.2. This comparison allowed us to determine whether certain attributes were more often associated

with officer or enlisted joint development requirements, which might be useful to the Air Force if it decides to use attributes in the selection of a particular group of airmen. The figure also shows the average proximity value for each attribute across all 60 joint requirements.

Figure 5.2. Attributes' Average Proximity to Officer DLAs, EDLAs, and All Requirements



In Figure 5.2, the attributes are grouped into high, medium, and low categories based on whether they received an average proximity value above 2.5 percent (high), between 1 percent and 2.5 percent (medium), or between 0 percent and 1 percent (low). These thresholds were selected to produce a fairly even distribution of attributes across the three categories (high, medium, and low). These three proximity categories also were used to develop the figures in Appendix E in the separate appendix to this report, which contain the proximity of each attribute for each of the 60 joint requirements. For these individual requirements, attributes either are not present (and thus receive proximity values of zero) or receive proximity values above 2.5 percent (as in the physical courage example above); only when they are averaged across multiple requirements do larger numbers of attributes fall into the low or medium proximity categories.

The proximity measure, as calculated in our analysis, is not intended to be a measure of importance. Instead, it is a descriptive measure that characterizes the prominence of certain attributes within the specific set of requirements we analyzed. As we mentioned in the previous chapter, analysts could reasonably come up with different deconstruction paths between requirements and attributes, and these differences could affect the proximity measure. Our aim was not to create precise metrics but rather to establish a systematic approach to how such measures could be calculated.

Stability or Malleability of an Attribute

A *stable attribute* is expected to remain relatively consistent over time and is unlikely to be developed through training or education. A *malleable attribute* can be developed in training, in

the workplace, or through experience. Malleability is often portrayed as a spectrum. Although some attributes are clearly stable or malleable, others fall somewhere in between and can be changed with varying degrees of effort and resources.

In general, attributes connected with personality and cognitive ability are considered more stable and, therefore, difficult to change (Lytell et al., 2016; Silzer and Church, 2009; Thornton and Rupp, 2005). Attributes connected to interpersonal skills and leadership can be moderately difficult to develop. Attributes related to physical ability, technical skills, problem-solving, and communication tend to be malleable and, therefore, relatively easier to develop (Lytell et al., 2016; Silzer and Church, 2009; Thornton and Rupp, 2005).

We rated the stability or malleability of an attribute using four classifications: stable, moderately stable or context dependent, malleable, and inconclusive. To assess the degree to which an attribute was relatively stable or malleable, we conducted literature reviews in academic databases (e.g., Web of Science, PsycInfo) and in related RAND reports, using search terms that combined a variety of synonyms and variations of *malleable* with the attributes.³⁷

This dimension is useful for making judgments about whether emphasis should be placed on accessing individuals with an attribute or developing the attribute over the course of an airman's career. The most straightforward way for the Air Force to ensure that airmen have stable attributes—which are difficult for an individual to change—is to bring in people who already display them.³⁸ If an attribute is moderately stable, it might be possible to change facets of the attribute through a mix of deliberate development and experience, although the Air Force would need to ensure that structures and incentives are in place to develop such attributes. If an attribute is malleable, development through education or training likely will be an effective way to increase the desired characteristic, assuming that there is adequate motivation for change. Stable and malleable attributes should be assessed at the time of entry to both detect the presence of the attribute and establish a starting point for further development.

Current Air Force Practices and Assessment or Screening Tools

In this dimension, we examined whether an attribute is currently screened for or could be screened for during Air Force accession processes, drawing on the processes and practices we discussed in Chapter 3 and Appendix B of this report. We primarily investigated whether the attribute is currently assessed, what methods are used for the current assessment, and what limitations are associated with this assessment. We focused in this dimension on four assessment methods—ASVAB, AFOQT, TAPAS, and SDI—because the Air Force collects this information

³⁷ Appendix F in the separate appendix to this report contains details on the classification assigned to each attribute, including relevant citations identified during this literature review.

³⁸ We recognize that organizational factors (such as incentives and rewards, disincentives, rules, norms, and the climate or culture) can shape an airman's behaviors in positive (or negative) ways, but an airman's individual stable attributes are unlikely to change over time.

systematically. Although the Air Force collects information through other mechanisms, such as interviews for officer pathways, it does not do so as systematically.

Additionally, we noted whether and how the assessment is tracked, when the assessment is conducted, and whether the assessment is used for screening. This dimension establishes a baseline from which to determine the extent to which the Air Force already assesses attributes and to identify potential untapped opportunities to do so. In conducting this assessment, we took a conservative approach to determine whether the 22 attributes are or could be assessed using these tools. Unless the definition of the attribute and the test item description were an exact match or a very close match, we did not consider them assessed using these tools. A more sophisticated examination of these tools through further research could identify a broader set of attributes that align with these four assessment methods.

Other Tools for Potential Use

In this dimension, we address whether other tools beyond those the Air Force is currently using are available to screen for an attribute and the degree to which such tools have been validated. We used a scale to rate (1) the availability of assessment tools for each attribute and (2) their reliability and validity using existing studies. Attributes were assessed across a spectrum, which included the following subcategories:

- tools that are available and widely used in different fields with demonstrated reliability and validity across many studies
- tools with limited availability that were developed for restricted use among certain groups of airmen or developmental stages and/or that lack evidence for reliability and validity, given the existing literature
- tools that are not readily available or are available only on a limited basis and that lack generalizability
- no available assessment tools.

The summary measure for this dimension, then, could be phrased as *testability*. An important caveat to testability is driven by the complexity of the attribute to be assessed. The more complex an attribute is, the more difficult it is to assess because complex attributes usually involve multiple subdomains. Skills that primarily depend on cognitive processes are easier to assess (e.g., numeracy), whereas those requiring interpersonal interaction (e.g., empathy) or noncognitive elements (e.g., motivation to succeed) are harder to assess. Because cognitive ability tests have a long history in educational assessments, more tools have been built and used over time. These tests also have higher reliability than assessment tools that measure constructs that can rely only on self-reports or observational assessments by peers and supervisors. After determining testability, we considered how test scores are used.

We conducted literature reviews in academic databases (e.g., Google Scholar, PsycInfo, National Center for Biotechnology Information) and in RAND reports using search terms that combined a variety of synonyms and variations of the particular trait. For example, in searching

for tools assessing orderliness, we also searched such keywords as “orderly,” “organized,” and “disciplined.” We identified the original developers of the tools and then looked for possible revised versions and other studies that used the tools to assess their reliability and validity. Likewise, we examined a wide variety of psychometric studies to assess the existence and validity of tools (experiments, tests, or other assessments) that addressed the attributes in question.

Attributes That Align with Air Force Foundational Competencies

The Air Force’s foundational competencies (which were formerly known as *institutional competencies*) are used to guide force development through education, training, and assignments (Curtis E. LeMay Center for Doctrine Development and Education, 2019). The Air Force might already be cultivating the attributes that align with its foundational competencies through its force-development processes. However, the Air Force also might want to identify candidates during accession who have these characteristics, especially in cases in which an attribute is applicable to a particular career field.

In the past, the Air Force maintained an institutional competency list that contained eight institutional competencies and 25 subcompetencies that it used to develop and assess airmen (Curtis E. LeMay Center for Doctrine Development and Education, 2019). On May 9, 2019, the Air Force Force Development Council replaced the institutional competencies with the Airman’s Foundational Competencies, a decision that was confirmed at the June 2019 CORONA conference.³⁹ We list the 22 foundational competencies and their definitions in Table 5.1.

³⁹ This information was provided to us in an email exchange with Competencies Division, AETC, October 28, 2019. The Air Force plans to revise relevant publications with the 22 new foundational competencies, including Air Force Handbook 36-2647 and Air Force Doctrine Annex 1-1.

Table 5.1. Air Force Foundational Competencies and Definitions

Foundational Competency	Definition
Accountability	Demonstrates reliability and honesty; takes responsibility for the actions and behaviors of self and team
Teamwork	Collaborates effectively with others to achieve a common goal or complete a mission task
Develops people	Invests in others to maximize their contributions to the mission by inspiring and providing an environment of continuous feedback and learning opportunities
Communication	Effectively presents, promotes, and prioritizes varied ideas and issues both verbally and nonverbally through active listening, through clear messaging, and by tailoring information to the appropriate audience
Resource management	Carefully and responsibly manages resources placed under an airman's control with the intent to maximize readiness and lethality and improve organizational performance
Perseverance	Displays grit in the accomplishment of difficult long-term goals; works strenuously toward challenges; maintains effort and interest over years despite failure, adversity, and plateaus in progress
Strategic thinking	Considers and organizes activities and resources to achieve a desired goal; thinks on large and small scales and over the long and short terms
Decisionmaking	Makes well-informed, effective, and timely decisions that weigh situational constraints, risks, and benefits
Service mindset	Desires to help or serve others to meet their needs; makes and focuses efforts to discover and meet others' needs
Results-focused	Demonstrates concern for working well or for competing against a standard of excellence
Flexibility	Adapts to and works with a variety of situations, individuals, or groups effectively
Change management	Adapts, helps others adapt, or implements change with the goal of ensuring that unit goals are properly aligned to the desired end state
Self-control	Keeps emotions under control and restrains negative actions when under stress
Creative thinking	Develops new insights into new situations, questions conventional approaches, and encourages new ideas and innovations
Leadership	Intentionally takes a role as a leader of others
Initiative	Does more than is required or expected to improve job results; takes action appropriately without prompting
Precision	Shows concern for order, quality, and accuracy with an underlying drive to reduce uncertainty in the environment
Analytical thinking	Identifies problems, evaluates alternative perspectives and solutions, makes timely and effective recommendations, and identifies courses of action
Information-seeking	Demonstrates an underlying curiosity; desires to know more about things, people, oneself, the mission, or issues; is an eager, aggressive learner
Influence	Intends to persuade, convince, or impress others to elicit their support to make specific impacts or achieve particular effects on others
Fostering innovation	Builds a culture of behaviors and business practices that encourages, champions, and rewards creativity and informed risk-taking; is open to change; rapidly adapts to new conditions and technologies
Resilience	Negotiates, manages, and adapts to significant sources of stress or trauma

SOURCE: Adapted from Air Force Handbook 36-2647, 2019.

We compared the definitions of the 22 Air Force foundational competencies with the definitions of our 22 attributes (shown in Table 4.1) to determine the degree to which they shared elements.⁴⁰ The alignment between our attributes and the Air Force foundational competencies can be found in Appendix F in the separate appendix to this report. Six attributes were not clearly referenced in the foundational competencies: self-awareness, humility, numeracy, physical fitness, spatial awareness, and self-efficacy. The Air Force might want to investigate whether any of these six attributes should be added to the foundational competencies or otherwise incorporated into force development.

Results of the Attribute Analysis

Our assessment of the 22 attributes along the five dimensions described in the previous section resulted in several broad groups of attributes with similar characteristics that could be useful in directing next steps or courses of action for the Air Force. The first group contains the attributes with high proximity to joint requirements, which we show in Table 5.2 with highlights of the results of our assessment for each of the five dimensions. Appendix F in the separate appendix to this report contains considerable detail about our analysis of each dimension for each attribute, including relevant citations.

Some of the attributes in Table 5.2 are being assessed through the AFOQT, ASVAB, SDI, or TAPAS, and these formal assessment tools should continue to be used to assess the attributes. However, the Air Force might want to expand the way in which it uses the data that are collected. During our discussions with Air Force subject-matter experts, there was no indication that these tests are being used to assess attributes specifically. Instead, assessments of attributes are aggregated into an overall report or score. Some efforts have attempted to tie these composite scores to various outcomes, such as career field success, separations, and problematic behaviors. However, for the purpose of assessing attributes for success in particular environments, such as joint environments, the Air Force should consider tracking attribute-level information for individual airmen across their careers.

Of particular interest are stable attributes with a high proximity value for which assessment methods exist but are not used. Because of the high proximity value, these attributes could be more likely to have an impact on meeting joint requirements. The Air Force could consider using existing methods (which we discuss later in this chapter) to assess these attributes or evaluate the use of other reliable tools being used in different settings. Most of the attributes shown in Table 5.2 also are included in the Air Force foundational competencies (self-efficacy and self-

⁴⁰ We analyzed the results twice—taking two approaches—to increase the reliability of the findings. For the first attempt, a study team member cross-walked the definitions of the 22 attributes with the definitions of the foundational competencies. For the second attempt, another study team member started with the definitions of the competencies and cross-walked them with the definitions of the attributes. The team members then reviewed each other's results and came to an agreement on whether an attribute and a competency aligned.

awareness are not). So, there might be value in assessing them not only for potential success in joint environments but also for Air Force–specific needs.

Table 5.2. Attributes with High Proximity to Joint Requirements

Attribute	Proximity Values in Deconstructions	Stability or Malleability of the Attribute	Current Air Force Practices		Other Tools for Potential Use	Alignment with Air Force Foundational Competencies
			Tools to Assess Officers	Tools to Assess Enlisted Members		
General mental ability	High	Varies ^a	AFOQT	ASVAB	Tools available with demonstrated reliability and validity	Yes
Self-control	High	Stable	SDI exact match	TAPAS exact match	Tools available with demonstrated reliability and validity	Yes
Openness to experience	High	Stable	SDI exact match	TAPAS exact match	Tools available with demonstrated reliability and validity	Yes
Integrity	High	Stable	SDI close match	TAPAS exact match	Tools available with demonstrated reliability and validity	Yes
Motivation to succeed	High	Moderately stable	SDI exact match	TAPAS exact match	Availability limited, use restricted, and lacks solid validity	Yes
Self-efficacy	High	Moderately stable	None	None	Availability limited, use restricted, and lacks solid validity	No
Self-awareness	High	Malleable	None	TAPAS close match	Availability limited, use restricted, and lacks solid validity	No
Tolerance for ambiguity	High	Inconclusive	None	None	Availability limited, use restricted, and lacks solid validity	Yes

NOTE: ^a General mental ability has relatively distinct and defined facets that can range from stable to malleable. See Appendix F in the separate appendix to this report for further explanation.

When we combine the five dimensions, our analysis suggests that the attributes with opportunities for assessment that are most likely to increase joint success are self-control, openness to experience, integrity, motivation to succeed, and self-efficacy. We highlight these attributes because they are stable attributes that appeared prominently in joint requirements, and, in most cases, reliable and valid tools are available to assess for these attributes. We do not include general mental ability in this list because the Air Force already routinely assesses for this attribute. We would expect that the most-substantial outcomes would come from enhanced assessments of these attributes, particularly at the time of recruitment and accession.

Table 5.3 shows the results of our assessment of the dimensions for attributes with medium proximity to joint requirements. Several of the attributes in this group—humility, motivation to learn, and empathy (for officers)—are not currently being assessed by the Air Force using formal tests.⁴¹ For humility, there are reliable assessment tools available that are not being used by the Air Force but could be evaluated for use. For example, the honesty and humility scale of the HEXACO Personality Inventory-Revised (HEXACO PI-R), with facets of sincerity, fairness, modesty, and greed avoidance, can be used.⁴² Humility is not included in Air Force foundational competencies, but it has been cited as critical in a military context for relationship-building, which, in turn, is necessary to effectively command (see Appendix F in the separate appendix to this report for further discussion).

Table 5.4 shows the attributes with the lowest proximity to joint requirements. This mix of stable and malleable attributes might not be amenable to improving outcomes through more-thorough assessments. In fact, most attributes are well aligned with assessment methods that the Air Force is already employing. Additional attention to these attributes during recruiting and accession is not likely to realize significant gains in success in joint environments. According to our analysis, there are likely to be greater gains from assessing the attributes identified in Table 5.2 at the time of entry.

⁴¹ However, there could be close matches to current Air Force assessments. For example, SDI's *agreeableness* might be an assessment of empathy for officers, and the OTS/AFROTC interview might provide insights into an individual's motivation to learn. However, additional research might be needed to understand whether these are the same.

⁴² The HEXACO model measures humility and honesty, emotionality, extraversion, agreeableness, conscientiousness, and openness to experience. See Lee and Ashton, 2018.

Table 5.3. Attributes with Medium Proximity to Joint Requirements

Attribute	Proximity Values in Deconstructions	Stability or Malleability of the Attribute	Current Air Force Practices		Other Tools for Potential Use	Alignment with Air Force Foundational Competencies
			Tools to Assess Officers	Tools to Assess Enlisted Members		
Conscientiousness	Medium	Stable	SDI exact match	TAPAS exact match	Tools available with demonstrated reliability and validity	Yes
Agreeableness	Medium	Stable	SDI exact match	TAPAS exact match	Tools available with demonstrated reliability and validity	Yes
Altruism	Medium	Stable	SDI exact match	TAPAS exact match	Tools available with demonstrated reliability and validity	Yes
Assertiveness	Medium	Stable	SDI exact match	TAPAS close match	Tools available with demonstrated reliability and validity	Yes
Humility	Medium	Stable	None	None	Tools available with demonstrated reliability and validity	No
Spatial awareness	Medium	Moderately stable	AFOQT	ASVAB	Tools available with demonstrated reliability and validity	No
Motivation to learn	Medium	Moderately stable	None	TAPAS close match	Availability limited, use restricted, and lacks solid validity	Yes
Verbal expression	Medium	Malleable	AFOQT	ASVAB	Tools available with demonstrated reliability and validity	Yes
Empathy	Medium	Malleable	SDI exact match	TAPAS exact match	Availability limited, use restricted, and lacks solid validity	Yes

Table 5.4. Attributes with Low Proximity to Joint Requirements

Attribute	Proximity Values in Deconstructions	Stability or Malleability of the Attribute	Current Air Force Practices		Other Tools for Potential Use	Alignment with Air Force Foundational Competencies
			Tools to Assess Officers	Tools to Assess Enlisted Members		
Orderliness	Low	Stable	SDI exact match	TAPAS exact match	Tools available with demonstrated reliability and validity	Yes
Creativity	Low	Varies ^a	SDI exact match	TAPAS exact match	Availability limited, use restricted, and lacks solid validity	Yes
Numeracy	Low	Malleable	AFOQT	ASVAB	Tools available with demonstrated reliability and validity	No
Physical fitness	Low	Malleable	None	TAPAS exact match	Tools available with demonstrated reliability and validity	No
Intellectual risk-taking	Low	Inconclusive	SDI close match	TAPAS close match	Not readily available, use is limited	Yes

^a Creativity has relatively distinct and defined facets that can range from stable to malleable. See Appendix F in the separate appendix to this report.

Opportunities to Assess Attributes

We introduce and describe a framework (depicted in Figure 5.3) that could be used to identify means, sources, and formats for general evaluations of attribute assessments. Broadly speaking, the methods used for assessing attributes involve either questioning or observing. The source of the attribute information is usually the accession candidate, but it could be a third party (e.g., a teacher or an employer) or an Air Force representative. This information can be supplied in a written or an oral format or in a combination of both and can come from a variety of sources. Alternative assessment types involve selecting a method, a source, and a format.

For example, much of the information collected on an accession candidate comes from one of the written tests (TAPAS, ASVAB, AFOQT, or SDI). These tests employ a questioning methodology and use the candidate as the information source. Although these tests provide a measure of an attribute, an actual observation performed by an Air Force representative (e.g., detachment staff or similar leaders) could provide an enhanced understanding of an accession candidate's attribute acuity. This example has an analogy with occupational skills; A written test assessing a candidate's mechanical capability provides understanding of the candidate's ability to perform mechanical tasks. However, the observations of an Air Force supervisor of the candidate actually performing a mechanical task, whether simulated or real, could provide additional understanding of the candidate's skill level.

In a similar way, the Air Force could use existing touchpoints during recruitment and accession to augment the mostly candidate-written attribute assessments already being performed. Table 5.5 illustrates such augmentations for the self-control attribute. Under each type of assessment (method, source, and format), we list the practice used by the Air Force and some of the limitations of this practice. At the bottom of the table, we offer attribute-level improvements specifically for the self-control attribute as an example of what could be done to perform a better assessment of this type.

Figure 5.3. Three-Dimensional Framework for Identifying Opportunities to Assess Attributes

Method	Source	Format
• Questioning • Observing	• Accession candidate • Air Force representative • Third party	• Written • Oral • Composite

Table 5.5. Example Opportunities to Assess Attributes During Recruitment and Accession

Type of Assessment	Questioning, Accession Candidate, Written	Questioning, Accession Candidate, Oral	Questioning, Air Force Representative, Composite
Current practice	• TAPAS and ASVAB • SDI and AFOQT	• Interviews (e.g., recruiters, ALOs, and detachment staff)	• In the DEP • During commissioning programs • AFROTC training
Limitations	• Results of the assessment are not used at the attribute level • Results are evaluated to determine impact on airman success on only a limited basis	• Not systematic • Not uniform • Not targeted • Not tracked	• Might be anecdotal • Might be costly • Might not be tracked throughout career
An example using the self-control attribute	• Self-control is a dimension in TAPAS and SDI, but it is not specifically examined and tracked	• Could ask a recruit to relate a story in which they exhibited self-control (common question for interviews, e.g., during college applications)	• Could develop interview protocols to assess and provide written and oral feedback targeted at self-control

As we mentioned earlier, the most common approach to assess attributes generally is questioning the accession candidate by using a written text. We begin with this practice, which consists of the TAPAS and ASVAB for enlisted candidates and SDI and AFOQT for officer candidates. The TAPAS, ASVAB, SDI, and AFOQT provide composite information about a candidate, but the Air Force does not currently perform an evaluation of the self-control attribute, although it could be included as a subelement of these tests. Furthermore, the statistical analyses

that are necessary to comprehensively correlate a self-control test score with career outcomes for this attribute have not yet been performed. Effort would need to be expended in both of these areas to improve the practice of administering a written set of questions to the candidate. Finally, a mechanism for tracking self-control throughout the airman's career would be needed to more effectively take advantage of this touchpoint during recruiting and accession.

Importantly, several of the attributes identified in this analysis fall into this category of current assessment practice (i.e., questioning the candidate in written form), which could be more effectively employed to assess the profile of attributes of a newly recruited airman that might indicate success in a joint environment.

Another common touchpoint in the current recruiting and accession process is interviews between an Air Force representative (e.g., recruiter, ALO, detachment staff member) and the candidate. Insights can be derived from questioning the candidate in an oral format. However, these interviews have multiple limitations that could be turned into useful opportunities. What questions are asked and how they are asked are left up to the interviewer and are neither systematic nor uniform. Interviewers do not have a ready set of questions to ask about an attribute that might seem promising or of concern. More importantly, the attributes identified in this analysis are not explicitly targeted within these interviews—but they could be.

For example, if an attribute-level score could be obtained from the candidate's written test, oral questioning could be used to enhance or refine what was already learned. Finally, as mentioned with the written candidate testing, results from oral questioning might be best composited and tracked throughout an airman's career. As an example, the interviewer might ask a specific question about an experience in which the candidate displayed the qualities of the attribute, such as "Tell me about a time when you displayed self-control in a tense situation." These types of questions are sometimes asked in college or job interviews. Because these types of interviews are time-consuming, as a practical matter, care should be taken to limit the number of times this style of question is used across a set of attributes when collecting additional information.

Finally, we move to the last column of Table 5.5, which possibly provides the most preferred information-collecting practice: direct observation of the candidate by an Air Force representative with a written and/or an oral format, resulting in a reinforcing composite. Such firsthand experiences could include candidate performance observed in the DEP while the candidate waits for BMT and during officer commissioning programs. An advantage of these methods is that they occur more systematically and in more-real-world, nonideal conditions that might include stresses that are not experienced by the candidate in examinations or interviews. Simulated conditions, such as those during AFROTC field training, could offer another opportunity to gather information about airmen attributes. However, results might be anecdotal if only one opportunity or a small number of observation opportunities occur. Furthermore, setting up such observation opportunities might be somewhat expensive. As noted with the other

methods, a career-tracking system would be needed to get the most out of the data collected from these types of approaches.

The Air Force already has a variety of opportunities to collect attribute-level qualities of recruiting and accession candidates, and it could develop new methods that are similar to those discussed in this chapter. In particular, if the Air Force desires to assess an airman's ability to perform in a joint environment, a process could be developed to collect information across methods, sources, and formats that would be more systematic and uniform. Such a process would facilitate deliberately targeting and tracking those attributes that contribute most to joint environments.

Chapter 6. Observations and Next Steps for the Air Force

As the Air Force considers new initiatives across the human capital life cycle to strengthen joint leaders and teams, recruiting and accession has emerged as an area of interest (Saltzman and the Air Force Strategic Integration Group, 2018, pp. 113–115). In this report, we identify 22 attributes that, if recognized during an individual’s accession, might increase the likelihood of that person achieving success in a joint environment. We analyzed these attributes along several dimensions, which highlighted the attributes on which the Air Force might want to focus.

During the course of our research, we observed that the Air Force does not systematically assess the variety of attributes identified in this study at the time of recruiting and accession. Some data are collected with regard to some attributes, but this information tends to be compiled into composite scores and is not used to specifically assess individual attributes. Thus, if the Air Force is committed to assessing for attributes at the time of entry, current processes and practices will need to change.

In this chapter, we provide observations and associated courses of action that the Air Force might wish to consider if it chooses to build on the methods described in this report. These observations are divided into three categories: (1) overarching considerations to guide Air Force efforts to strengthen joint leaders and teams, (2) the use of attributes that indicate joint potential during recruiting and accession, and (3) courses of action focused on specific attributes.

Overarching Considerations to Guide Air Force Efforts

The Air Force could improve its approach to SJLT in the following three areas:

- **Establishing official joint development guidance:** The Air Force needs a clear statement of goals to guide policy actions aimed at improving the joint proficiency of airmen. We were unable to find a single source of joint requirements as a starting point for our research. As a result, we turned to numerous sources to identify requirements, many of which were more narrowly focused than current Air Force objectives to develop joint potential in all airmen. Clearly identifying the desired requirements and objectives is an essential baseline from which to further define the attributes that airmen will need to be successful in a joint environment.
- **Targeting a segment of the force:** Current Air Force philosophy is to develop joint proficiency in all airmen—officers, enlisted personnel, and civilians. However, not everyone needs to be equally steeped in joint matters. It would be more effective for the Air Force to prioritize developing joint proficiency in a portion of the force so that analysis of attributes and KSAOs can be targeted to that segment. The Air Force can then assess airmen for the presence of a more targeted set of attributes during recruiting and accession; assign airmen who possess stable attributes to specific education, training, and career field assignments to cultivate malleable attributes; and reassess the target

population periodically to determine whether Air Force efforts are paying off.⁴³ However, to target a segment of the force, the Air Force needs to develop better methods to identify these segments by tracking individuals' joint career experiences—beyond what is currently used to track JQOs and other specialized components of the force.

- **Formalizing a method to identify attributes:** Given the Air Force's growing interest in moving beyond occupational requirements to attributes, an important first step would be to formalize and codify a process by which the Air Force can identify attributes. The approach we used offers a starting point. Joint requirements will change over time to reflect changes in the national security environment; in turn, the types of attributes needed for an individual to operate effectively in that environment might change. As requirements evolve, the identification of attributes will need to be revisited on a periodic basis. In addition, Air Force stakeholders will have to think about the implications of these changes for airmen who are recruited and accessed under legacy requirements. In certain cases, such as for malleable attributes, provisions can be made for additional force development opportunities to bring airmen up to date with emerging requirements.

Use of Attributes During Recruiting and Accession

The Air Force primarily uses cognitive testing, the satisfaction of medical and administrative requirements, and applicant preference to decide whether to access an individual and assign them to a career field. After entry, initial skills training and on-the-job training are primarily focused on developing job knowledge and skills. Focusing on attributes during recruiting, accession, and development would require the following changes in processes and practices:

- **Systematically and uniformly collecting and tracking attribute data:** A systematic approach to collecting attribute data would ensure that collection opportunities, perhaps triggered by particular conditions or events, are not missed and are approached in a uniform way. For example, a questionable attribute score on a written test could signal a requirement to follow up with a candidate in a structured interview that explores the attribute.
- **Leveraging existing opportunities to assess for attributes:** According to Air Force subject-matter experts, the assessment tools used during recruiting and accession—the ASVAB, AFOQT, TAPAS, and SDI—are not currently used to formally assess and track individual attributes, but subelements of these tests could be a rich source for extracting such information. Other untapped opportunities to enhance or refine attribute assessments include recruiting interviews. However, to take advantage of these opportunities, the Air Force will need to invest in developing standardized methods, such as structured interviews and analytical tools, to correlate the attribute data that are collected with an individual's ability to achieve joint proficiency later in their career.

⁴³ Here, we describe how the attributes might be used to screen airmen into specific education, training, or career field assignments. But the attributes also can be used to screen airmen for the absence of specific attributes, particularly in airmen who might be weak in stable attributes that are difficult to develop. We also recognize that attributes do not necessarily divide cleanly into stable or malleable categories. Therefore, the Air Force might want to both select for and develop some attributes.

- **Considering whether attributes should be emphasized in marketing:** Current Air Force marketing efforts rarely focus on attributes of any kind. In developing future marketing efforts, the Air Force needs to consider whether and how attributes should be included—whether they are general attributes or those indicating joint potential. Either way, marketing will need to be tuned to attract sufficient numbers of qualified candidates that support both service-centric and joint objectives.

Attribute-Level Observations

Our analysis of various dimensions of the 22 attributes, which we discussed in Chapter 5, highlighted several attributes on which the Air Force might focus in recruiting and accession. Here, we offer the following specific suggestions on next steps the Air Force might take:

- **Focus on the “low-hanging fruit”:** As the Air Force considers whether to assess attributes at the point of entry, it should focus initial efforts on attributes that are relatively prominent in joint requirements, that are more difficult to develop, and that can be assessed using data that are already collected during recruiting and accession but not used for this purpose. These attributes include self-control, openness to experience, integrity, and motivation to succeed. As we mentioned previously, some resources might be needed to process, store, and track the results of these assessments and correlate this information with an airman’s career performance.
- **Consider a pilot program to identify and track attributes:** The Air Force might wish to implement a pilot program to identify and track attributes in candidate airmen. The pilot could include the development of milestones and measures of performance for a targeted set of airmen. Milestones might include entry-level screening and assessments and potential retesting over the course of an airman’s career. Measures of performance could be derived from joint guidance. Existing longitudinal data (in addition to data gleaned from the pilot) could be used at various career points to determine whether airmen with certain attributes are indeed more successful in joint environments.
- **Evaluate additional testing tools:** Current Air Force assessment tools do not capture the variety of attributes identified in this research. To assess for certain attributes, the Air Force might need to consider using additional testing tools. In our assessment of the dimensions of these attributes, we identified examples of other tools that might be appropriate for this purpose—such as the honesty and humility scale of the HEXACO PI-R to test for humility or a structured interview protocol designed around select attributes—but our investigation was illustrative, not exhaustive. The Air Force can draw on this information as a starting point for identifying and evaluating alternative methods.
- **Consider revisions to the foundational competencies:** Our research suggests that attributes indicating joint potential are not particularly unique. Only six attributes that we identified—humility, self-efficacy, spatial awareness, physical fitness, self-awareness, and numeracy—are not aligned with Air Force foundational competencies. Researching these six attributes further could uncover more overlap than this initial research suggests. The Air Force might want to add some or all of these attributes to its foundational competencies and use that merged list not only as the basis for developing airmen but also in recruiting and accession. Our research identifies stable attributes, which are perhaps best obtained through accession, and malleable attributes, which can be enhanced

through development and experience. Both types of attributes could guide the use of the attribute or competency list.

Concluding Thoughts

The Air Force is engaging in research to better understand the connection between individual attributes and job performance. Some examples of such research include investigations into the reliability of the SDI as a screening tool for entry into certain officer specialties, tools for helping recruits self-identify attributes to optimize job matches, and the use of attributes to screen out problematic behaviors. At the same time, AETC is establishing a new force-development paradigm to provide the Air Force with competent airmen who possess the necessary dispositions, abilities, and attitudes in addition to the right occupational skills.

The exploratory work in this report can contribute to the Air Force's efforts by providing an initial systematic and documented method for identifying attributes from existing joint development requirements. However, as we point out, the attributes that resulted from this exploration substantially overlap with foundational competencies, which suggests that the Air Force needs to focus less on developing a unique list of attributes related to joint potential and more on how to assess for these characteristics during recruitment and accession. As we highlighted in this report, there are many touchpoints during recruitment and accession where attributes of potential candidates could be collected. By taking advantage of these opportunities, the Air Force could begin to assess for attributes that indicate potential for success in a joint environment at the point of entry.

As we mentioned at the outset of this report, further research could be conducted that would strengthen the results of this initial effort to identify attributes related to joint potential. Further research and analysis will be needed to ensure that the service's own requirements for joint proficiency are clearly codified and that the 22 attributes highlighted in this report accurately reflect those requirements. A more complete understanding of the relationships among the attributes is needed to help refine their use in selection processes. In addition, research on the relative importance of these attributes would give the Air Force information to help prioritize attributes that would be assessed at the point of entry and then emphasized throughout airmen's careers—with the aim of improving their potential for success in a joint environment.

Appendix A. Definitions of Related Terms

To assess attributes, we needed to start with a definition, and this commonly used term had no single definitive definition. There are also several terms that can seem similar to *attribute*, and employers often assess for similar terms when hiring or promoting employees (e.g., knowledge, skills, abilities). In Table A.1, we list the definition of *attribute* used in this analysis and define other terms used in the definition of *attribute* (*characteristic* and *quality*). In Table A.2, we provide definitions of closely related terms.

Table A.1. Definitions of *Attribute* and Closely Related Terms

Family of Terms	Term	Definition
Attribute	Attribute	A characteristic, quality, or feature of an individual (Babbie, 2010; Merriam-Webster, undated-a). Some attributes are considered to be immutable or intrinsic (e.g., age, gender, ethnicity); others are alterable (e.g., marital status, organizational tenure) (Pelled, Eisenhardt, and Xin, 1999).
	Characteristic	"A particular feature or quality of a person, animal, or other unit of interest, especially any of the enduring qualities or traits that define an individual's nature or personality in relation to others" (American Psychological Association, undated)
	Quality	"A characteristic or feature of something, be it physical or abstract" (American Psychological Association, undated)

Table A.2. Definitions of Terms That Are Similar to *Attribute*

Family of Terms	Term	Definition
Personality (aspects of personality can be considered attributes)	Personality	Relatively stable behavioral patterns. The Big Five personality traits are openness, conscientiousness, extraversion, agreeableness, and neuroticism. According to the American Psychological Association, <i>personality</i> is "the enduring configuration of characteristics and behavior that comprises an individual's unique adjustment to life, including major traits, interests, drives, values, self-concept, abilities, and emotional patterns" (American Psychological Association, undated).
	Trait	Enduring personality characteristics that exert a strong influence on behavior (American Psychological Association, undated; Korn Ferry, 2015; Stewart and Latham, 1986)
	Disposition	"A recurrent behavioral, cognitive, or affective tendency that distinguishes an individual from others" (American Psychological Association, undated)
	Character	Mental and moral qualities distinctive to an individual or "the totality of an individual's attributes and personality traits, particularly his or her characteristic moral, social, and religious attitudes. Character is often used synonymously with personality" (American Psychological Association, undated).

Family of Terms	Term	Definition
Knowledge (not considered an attribute in this analysis)	Values	"Stable life goals that people have, reflecting what is most important to them" (Bauer and Erdogan, 2010); terminal and instrumental values differ (end states people desire versus modes of conduct)
	Knowledge	Sets of facts, principles, or procedural information needed to do a job (Spector, 2012; Wenger et al., 2017)
	Competency	<i>Competency</i> is similar to <i>skill</i> in that it is a proven ability or the ability to do a job successfully or efficiently (Cummings and Worley, 2015; U.S. Office of Personnel Management, undated) or behaviors that one is "expected to demonstrate on the job" (Straus et al., 2018).
Ability (not considered an attribute in this analysis)	Experience	Assignments or roles that prepare a person for future roles (Korn Ferry, 2015)
	Ability	The capacity to perform an observable activity or enduring talent that helps a person do a job. <i>Ability</i> can sometimes overlap with either <i>skill</i> or <i>aptitude</i> , depending on one's definition (Centers for Disease Control and Prevention, undated; Spector, 2012; Wenger et al., 2017).
	Aptitude	"The potential for performing the activity" (Centers for Disease Control and Prevention, undated) or "the capacity to acquire competence or skill through training. Specific aptitude is potential in a particular area (e.g., artistic or mathematical aptitude); general aptitude is potential in several fields. Both are distinct from ability, which is an existing competence" (American Psychological Association, undated). Synonyms include <i>affinity</i> , <i>disposition</i> , <i>inclination</i> , <i>proclivity</i> , <i>predilection</i> , and <i>penchant</i> .
	Capability	Closely related to <i>ability</i> and <i>aptitude</i> , <i>capability</i> is "an ability, talent, or facility that a person can put to constructive use" (American Psychological Association, undated). It can indicate the potential to develop a skill, or it can indicate a not-yet-developed ability. Synonyms include <i>ability</i> , <i>capacity</i> , and <i>competence</i> .
	Capacity	Often used in terms of an organization's capacity but can apply to the "maximum ability of an individual to receive or retain information and knowledge or to function in mental or physical tasks" or "the potential of an individual for intellectual or creative development or accomplishment" (American Psychological Association, undated).
	Skill	How well a person is able to do a task; an observable competency (Korn Ferry, 2015). Skills can be developed over time through training or experience (Spector, 2012; Wenger et al., 2017).
	Soft skills	Attributes that go "beyond the knowledge/skill/ability domains, referred to variously as 'personality characteristics,' 'noncognitive attributes,' 'soft skills,' 'social and emotional competencies,' or '21st century skills'" (National Research Council, 2011, as quoted in Sackett and Walmsley, 2014). Leadership, communication, and people/team/collaboration skills are often lumped into soft skills. Soft skills tend to be harder to assess than observable competencies.
Knowledge, skills, and abilities (a common term that covers several concepts)	KSAs	Sometimes called KSAs, KSAOs are "Knowledge, skills, abilities, and other personal characteristics necessary for good job performance" (Spector, 2012, p. 427). Frequently, an organization recruits candidates that best fit the KSAOs as defined in the job description. An organization might use a "competency system" for hiring, which is a process through which "crucial competencies (KSAOs) for a job are identified and employee progress toward developing those competencies is tracked" (Spector, 2012, p. 423).

Appendix B. Assessment Tools

This appendix provides tables associated with the assessment tools discussed in Chapter 3. In this appendix, we list and describe TAPAS dimensions (Table B.1), ASVAB sections (Table B.2), SDI dimensions (Table B.3), AFOQT sections (Table B.4), and the evaluation factors for OTS and AECF AFROTC interviews (Table B.5).

Table B.1. TAPAS Dimensions

Big Five Dimension	TAPAS Dimension	Description
Extraversion	Dominance	High-scoring individuals are domineering, “take charge,” and are often referred to by their peers as “natural leaders.”
	Sociability	High-scoring individuals tend to seek out and initiate social interactions.
	Attention-seeking	High-scoring individuals tend to engage in behaviors that attract social attention; they are loud, entertaining, and even boastful.
Agreeable	Consideration	Individuals scoring high on this facet are affectionate, compassionate, sensitive, and caring.
	Generosity	High-scoring individuals are generous with their time and resources.
	Cooperation	High-scoring individuals are pleasant, trusting, cordial, noncritical, and easy to get along with.
Conscientiousness	Achievement	High-scoring individuals are seen as hardworking, ambitious, confident, and resourceful.
	Order	High-scoring individuals tend to organize tasks and activities and desire to maintain neat and clean surroundings.
	Self-control	High-scoring individuals tend to be cautious, levelheaded, able to delay gratification, and patient.
	Responsibility	High-scoring individuals are dependable, are reliable, and make every effort to keep their promises.
	Nondelinquency	High-scoring individuals tend to comply with rules, customs, norms, and expectations, and they tend not to challenge authority.
	Virtue	High-scoring individuals strive to adhere to standards of honesty, morality, and “good Samaritan” behavior.
Emotional stability	Adjustment	High-scoring individuals are well adjusted, are worry-free, and handle stress well.
	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.
Openness to experience	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 think outside the box.

Big Five Dimension	TAPAS Dimension	Description
	Curiosity	High-scoring individuals are inquisitive and perceptive; they are interested in learning new information and attend courses and workshops whenever they can.
	Aesthetics	High-scoring individuals appreciate various forms of art and music and participate in art-related activities more often than do other individuals.
	Tolerance	High-scoring individuals are interested in other cultures and opinions that might differ from their own.
	Depth	High-scoring individuals exhibit behaviors targeted toward understanding the meaning of one's life and/or facilitating self-improvement, reflection, and self-actualization.
Not applicable	Physical conditioning	High-scoring individuals tend to engage in activities to maintain their physical fitness and are more likely than other individuals to participate in vigorous sports or exercise.

SOURCE: Adapted from Stark et al., 2014, p. 157.

Table B.2. ASVAB Tests and Dimensions

Test	Domain	Description
General science	Science/technical	Knowledge of physical and biological sciences
Arithmetic reasoning	Math	Ability to solve arithmetic word problems
Word knowledge	Verbal	Ability to select the correct meaning of a word presented in context and to identify the best synonym for a given word
Paragraph comprehension	Verbal	Ability to obtain information from written passages
Mathematics knowledge	Math	Knowledge of high school mathematics principles
Electronics information	Science/technical	Knowledge of electricity and electronics
Auto information	Science/technical	Knowledge of automobile technology
Shop information	Science/technical	Knowledge of tools and shop terminology and practices
Mechanical comprehension	Science/technical	Knowledge of mechanical and physical principles
Assembling objects	Spatial	Ability to determine how an object will look when its parts are put together

SOURCE: Adapted from ASVAB, undated.

NOTE: Test-takers take the tests in the order in which they are listed.

Table B.3. SDI Dimensions

Big Five Dimension	SDI Facet	Description
Agreeableness		The kinds of interactions an individual prefers, ranging from compassion to antagonism
	Team player	Being a dependable and responsible team member
	Pleasant	Tendency to be in a pleasant mood, act friendly, and get along well with others
	Helpful/altruistic	Tendency to be helpful and generous to others with time and effort
	Optimist	Has a happy, hopeful, and encouraging outlook on life and the future
	Well-adjusted	Enjoys being around upbeat people while engaging in well-adjusted behavior with laughter, honesty, and dependability
Neuroticism		The chronic level of emotional adjustment and instability
	Stress under pressure	Tendency to experience stress and discouragement when faced with high-pressure situations
	Temperamental	Gets easily upset over events; can be irritable and sensitive to criticism
	Worry	Worries a great deal over many things, including what the future holds and how things might go wrong
	Angry/hostility	Reacts with anger and hostility to many stimuli, are easily upset, and have short tempers
Extraversion		The quantity and intensity of preferred interpersonal interactions, activity level, need for stimulation, and capacity for joy
	Reserved	Is typically shy and reserved in social situations, often quiet and withdrawn
	Dominance/leader	Tendency to take charge in group settings, dominate conversations, and are viewed as a leader
	Excitement-seeking	Enjoys excitement and tend to seek out stimulating situations
	High-intensity pleasure	Has a preference for environments with high-intensity stimulation, such as loud noises and bright lights
	Activity	Prefers to stay active much of the time, have a wide variety of activities and enjoy multitasking
	Spontaneous/variety	Frequently engages in unplanned and spontaneous activities
Conscientiousness		The degree of organization, persistence, control, and motivation in goal-directed behavior
	Achievement/striving	Usually engaged in goal-directed behavior and striving to achieve
	Order	Is neat and organized with a strong preference for environments with orderly arrangement

Big Five Dimension	SDI Facet	Description
	Self-discipline	Focused and dedicated to working hard and completing the task at hand in a timely manner
	Deliberation	Carefully think through details of a plan and consequences of behavior before acting
	Unconventional	Not strictly bound to following rules, especially if they do not make sense in a given situation
Openness		The active seeking and appreciation of experiences for one's own sake
	Creative	Having the ability to arrive at many novel and innovative solutions to ill-defined problems
	Reflective	Propensity to engage in deep reflective thought and meditation; in tune with inner feelings
	Scientific interest	Being highly interested in all topics of science and technology
	Cultured	Valuing artistic expression and performance, such as art museums, theater, and dance
	Imagination	Having an active and vivid imagination, often resulting in daydreaming and fantasy
Machiavellianism		The level in which one engages in deceit, craftiness, and duplicity to expedite control
	Interpersonal tactics	Employing manipulative and exploitative tactics with others as a means for achieving desired ends
	Cynical view	Possessing a cynical and negative view of human nature, emphasized with lack of trust
	Envious	Often experiences envious and resentful emotions concerning what others have
	Influence tactics	Employing charm and persuasive tactics with others to gain compliance
	Independent	Having a preference to work alone on tasks and problems because others are seen as obstacles to accomplishment

SOURCE: Adapted from Manley and Weissmuller, 2017.

Table B.4. AFOQT Subtests and Descriptions

	Subtest	Description
Required to commission	Verbal analogies	Ability to reason and see relationships among words
	Arithmetic reasoning	Ability to use arithmetic to solve problems
	Word knowledge	Knowledge of words and their meanings
	Math knowledge	Knowledge of mathematical terms and principles
	Reading comprehension	Incorporates the types of written materials required in officer professional military education
Not required to commission	Situational judgment test	Evaluates judgment in responding to the types of interpersonal situations frequently encountered by officers
	SDI	Personal style and attitudes
	Physical science	Concepts related to physical science
	Table reading	Ability to read a table quickly and accurately
	Instrument comprehension	Ability to determine the position of an airplane in flight
	Block counting	Ability to “see into” a three-dimensional pile of blocks
	Aviation information	Knowledge of aviation

SOURCE: U.S. Air Force, 2014a.

NOTE: Each subtest is used in at least one composite score; these scores include pilot, CSO, ABM, academic, verbal, quantitative, and situational judgment. Not all subtests are used to determine general eligibility; some subtests are used in composites for specific career fields, and the SDI is used only in rare circumstances during the OTS selection boards.

Table B.5. OTS and AECP AFROTC Interview Evaluation Factors

Evaluation Factor	Description
Appearance	Grooming, posture, physique
Confidence, maturity	Sincerity, social adjustment
Attitude	Adaptability to military life, travel, remote assignment
Motivation	Enthusiasm, worked way through school, effort to make interview
Work experience	Positions held, responsibility, supervision
Leadership potential	Team captain, project officer, community activities, volunteer work, chairperson
Mental alertness	Ability to present and understand ideas
Communication skills	Grammar, vocabulary, articulation
Potential to complete program	Interest in program, reaction to program
Overall evaluation	N/A

SOURCE: Air Force Form 56, 2006, Section III.

NOTE: N/A = not applicable. This interview evaluation is applicable for candidates who are required to fill out Air Force Form 56, including OTS and AECP AFROTC candidates.

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