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Organizational and Cultural Causes of Army First-Term Attrition

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Preface

This report documents research and analysis conducted as part of a project entitled *Life in the Army and Soldier Performance*, sponsored by the Office of the Assistant Secretary of the Army for Manpower and Reserve Affairs. The purpose of the project was to examine whether certain organizational factors (e.g., deployment cycle, peer characteristics, and command culture), as well as institutional factors (e.g., norms and processes in the implementation of Army directives) related to a soldier's experience in the U.S. Army, contribute to first-term attrition and whether there are potential opportunities to reduce attrition related to these factors.

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Summary

The research reported here was completed in September 2020, followed by security review by the sponsor and the Office of the Chief of Public Affairs, with final sign-off in August 2021.

The U.S. Army invests significant resources in recruiting, training, and preparing new soldiers. When a soldier does not complete a full contract term, the Army views this as a net loss. The goal of the research summarized in this report is to determine whether organizational factors matter, in a substantive way, for producing attrition and to generate hypotheses regarding the mechanisms by which organizational factors generate attrition. Prior research has assessed the possible role of many factors in producing attrition, including individual soldiers' characteristics, characteristics of their leaders, and institutional factors. We make use of the random assignment of soldiers to their first battalion to determine whether the "luck of the draw"—the battalion to which the soldier is assigned and the senior noncommissioned officer (NCO) at that battalion—is directly linked to the observed variation across assignments in eventual first-term outcomes. We complement that analysis by exploring, through qualitative data collection, the factors that could be driving noted differences across units, such as leadership and command culture, availability of soldier supports, management of deployment and training cycles, and installation and housing amenities. The aim of this report is to examine these factors together and to generate hypotheses that address the mechanisms that could be driving attrition. To the extent that there is evidence of factors under the Army's control that are associated with attrition, we sought to delineate opportunities to address those factors.

Rather than conceptualizing attrition as a soldier being "fired" for poor performance that is a function of personal characteristics and not environment, this report describes attrition as a process in which leadership may fail to provide needed interventions or to perpetuate a culture in which soldiers want to and are able to remain in service. The report is broken into two parts: The quantitative part shows that organizational factors—specifically, a soldier's first assigned battalion—affect attrition above and beyond the effects of individual characteristics. The qualitative part highlights potential pathways through which battalion-level characteristics might manifest in differential attrition outcomes.

Soldier Outcomes Differ by First Assignment

The quantitative analysis incorporates a measure of organizational effects in addition to individual-level effects on attrition. The organizational effects are captured by the particular combination of battalion and senior NCO to which a soldier is first assigned. Leveraging the rich information available in the Total Army Personnel Database–Active Enlisted (TAPDB-AE) and building on past work in this area, we matched soldiers in their first modification table of organization and equipment assignments to senior NCOs in the battalion headquarters company associated with that unit. This matching process allowed us to calculate the impact of a

soldier's first assignment on eventual first-term outcomes, by comparing soldiers in the same military occupational specialty (MOS) assigned to different battalions within the same installation in the same year. Although similar random assignment mechanisms have been leveraged in several other studies of military-related outcomes, it has not been used to study failure to adapt.

The analysis yields three major results. First, a soldier's first assignment can substantially affect his or her probability of failing to adapt. Regardless of the location to which a soldier is assigned, the particular combination of battalion and senior NCO can alter the probability of failing to adapt by several percentage points (upward or downward)—after controlling for the baseline rate of attrition among soldiers with the same MOS at the same installation who arrived in the same year. In other words, even within an installation, the probability of two new junior enlisted soldiers failing to adapt can differ by several percentage points depending on the battalions to which those soldiers are first assigned.

Second, there is a systematic relationship between a combined battalion and NCO effect on failure to adapt and the effect on reenlistment. We find that, on average, if three soldiers who otherwise failed to adapt were to complete their first term, then one soldier also assigned to that battalion during the same period would reenlist who otherwise would not have reenlisted. This suggests that there is a link between a battalion's or leader's ability to mitigate attrition and a battalion's or leader's ability to encourage reenlistment. To the extent that soldiers who are successfully brought back from the brink of attrition may be made successful career soldiers, there is a potentially large return on investment for the Army to be had in identifying what makes for a low-attrition battalion or senior NCO.

Finally, we find that, although some portion of attrition outcomes vary with the tenure of different senior NCOs, attrition in a particular battalion is "sticky." That is, our further analysis accounting for leadership changes within battalions suggests that battalions with particularly high or low attrition maintain that status when the senior NCO rotates out. Thus, invariant attributes of battalions must account for some portion of first-term attrition.

Several explanations are possible—for example, different battalion "cultures" that instill Army values to different degrees, battalions' different experiences with deployment or different operational tempos, or battalions' different approaches to discipline or mentorship. The finding does not mean that leadership does not matter—rather, it implies that senior NCOs do not account for the full story.

Leadership, Experience with Jobs, Training Calendar, and Social Support All Matter

The qualitative portion of this research is intended to suggest hypotheses for future research on attrition, rather than to explain organizational drivers of attrition. We conducted semistructured interviews with soldiers, all in their first term, some currently enlisted and some in the process of formal separation. The soldiers represented a broad range of characteristics in terms of time in service and MOS. We also conducted interviews with unit- and installation-level leadership. These interviews provided us with both the junior enlisted and leadership perspectives on the possible drivers of attrition. For one, unit-level NCOs appear to play an outsized role in attrition outcomes. These busy NCOs have wide discretion in whom they decide to invest time to provide guidance and mentorship. In our discussions with soldiers, we heard of

cases of soldiers' duties not matched to their expectations, as well as the wearing effect that the monotony of the tasks has on a soldier's morale and motivation.

Soldiers at multiple installations indicated that the pace of training calendars made adapting to Army life difficult, and this was further exacerbated by their lack of understanding of why a given training exercise was necessary. This was also compounded by the effect of multiple training exercises being planned within the period of a few months. Also related to leadership, soldiers reported feeling that the training calendar was not always communicated in a timely manner in advance, making it difficult to plan other aspects of their lives. Although improved communication would not completely abate the stresses of fast-paced training calendars, soldiers reported that more-advanced notice would help with planning and managing the related stress.

With respect to living conditions, soldiers reported that barracks conditions (including cleanliness, layout, and amenities) detracted from their quality of life. Another important factor was the physical location of the barracks and the distance between the barracks and their unit headquarters and other important locations that were critical in a soldier's quality-of-life assessment. Finally, social support appears to offer some possibility to arrest cycles of soldier decline that may end in attrition, while family life may actually contribute to attrition (but was not reported to cause attrition independently). Last, a small number of respondents suggested that institutional policies about Army end strength may indirectly affect tolerance for attrition at the unit level.

The research presented here is an initial exploration of first-term attrition as an organizational phenomenon in today's Army. The research affirms that attrition varies by battalion in ways that can arguably be addressed by adjustments to Army policies and programs. Our exploratory qualitative analysis delves into some of the factors that could be accounting for that variation, including unit culture, leadership, job match, operational tempo (including its communication to soldiers), and social supports. Our findings are consistent with prior research that identifies many of these same issues facing other military personnel. Additional research is needed to build on the work already done, supplemented with wider access to units, both their soldiers and leaders, to allow for more-robust data collection into the within-unit dynamics and processes investigated in this study.

Acknowledgments

We want to begin by thanking our sponsor and the staff in the Office of the Assistant Secretary of the Army for Manpower and Reserve Affairs, especially our action officer, Linden St. Clair. We also wanted to thank our contacts at U.S. Army Forces Command and at the installations where we conducted our site visits. Our gratitude goes out to the soldiers who took part in our interviews and a number of other officials across the Army who took the time to speak with us for this study. At RAND, we would like to thank the management team of RAND Arroyo Center's Personnel, Training, and Health Program, Michael Linick, director; Maria Lytell, associate director; and Chaitra Hardison, associate director, for their support throughout this project. We received advice on our approach and analysis at various stages of this study from a number of colleagues, including Peter Glick, Jennie Wenger, Bryan Hallmark, Andrew Morral, and Terry Schell. We thank our two reviewers, Lawrence Hanser, senior behavioral scientist at RAND, and William J. Strickland, president (retired) of the Human Resources Research Organization. Our thanks also to Natalie Richards for her excellent administrative support, to Kofi Amofa for assistance in formatting the document, and the numerous RAND colleagues not named here who provided us with subject-matter expertise and methodological advice throughout the study.

Abbreviations

AFQT	Armed Forces Qualification Test
BCT	Basic Combat Training
CMF	career management field
DEP	Delayed Entry Program
KIA	killed in action
LPM	linear probability model
MEPS	Military Entrance Processing Station
MIA	missing in action
MOS	military occupational specialty
MTOE	modification table of organization and equipment
NCO	noncommissioned officer
NTC	National Training Center
OCB	organizational citizenship behavior
PT	physical training
TAPDB-AE	Total Army Personnel Database--Active Enlisted
UIC	unit identification code
WDB	workplace deviance behavior

Introduction

The U.S. Army invests significant resources in recruiting, training, and preparing new soldiers. When a soldier does not complete a full contract term, or *attrites*, the Army views this as a net loss. To be able to enlist in the Army, a potential recruit must achieve a minimum score on the Armed Services Vocational Aptitude Battery; meet medical, moral, and physical requirements; and be a high school graduate or equivalent.¹ Our conversations with Army leadership suggest that these requirements were established on the basis that they are associated with a higher likelihood of completing a contract and potentially reenlistment. Most of these efforts have focused on trying to determine how best to recruit individuals whose characteristics suggest they are the best “fit” with Army life, yet less attention is given to what happens after soldier accession. Undeniably, there are individual-level factors over which the Army has very little control that lead to attrition. Many of these are difficult to identify and address, but there are also possibly organizational aspects that the Army does have control over, can improve on, and can leverage to mitigate attrition where it is possible and makes sense to do so. These aspects, explored in more detail later, include leadership, installation characteristics, and other conditions that influence the early experiences of an enlisted soldier. The goal of this report is to look into those potentially malleable factors.

Study Purpose

The premise of this research is simple. Intuitively, if two identical soldiers were to be assigned to two different units immediately after Basic Combat Training (BCT), one might attrite before the end of the first contract, and the other might not. We were asked by the Army to study factors beyond individual-level soldier characteristics that underlie first-term attrition—that is to say, why our hypothetical identical soldiers might have very different outcomes. We take two different, but complementary, approaches to examine this issue. It should be noted that, originally, our intent was to operationalize factors that could drive attrition and investigate them directly in the Army administrative data. However, organizational and institutional measures are not captured in ways that would support such analyses, and thus we took an alternative approach. We employed quantitative techniques to examine correlational relationships between attrition and soldier individual attributes and general characteristics on accession, such as pay grade, career management field (CMF), and BCT location. We subsequently exploited a naturally occurring random assignment mechanism to identify causal relationships between a sol-

¹ Army enlistment requirements are listed at U.S. Army, “Learn How to Join,” webpage, undated.

dier's first placement in an Army battalion and that soldier's first-term enlistment outcome. We complemented this analysis with qualitative interviews at select installations to understand the personal stories and experiences of junior enlisted soldiers (both currently enlisted and soon-to-be separating), as well as unit- and installation-level perspectives on soldier attrition and the driving factors. The overall objective is to develop a better understanding of the relative importance of organizational factors in influencing attrition, vis-à-vis individual factors; the organizational factors are ones over which the Army has the most direct control. The report also sheds light on some of the underlying mechanisms that make up these organizational factors, and we suggest areas of further research and investigation into these mechanisms. Additional details on our analytic approach are provided below.

Methods

We used both quantitative and qualitative methods to explore organizational aspects of first-term attrition. We also conducted a literature review to provide background on attrition research and help frame the issues we were exploring in both our quantitative and qualitative analyses. Our approach to each of the methods is described below.

Literature Review

Our quantitative and qualitative analyses were informed by a literature review. The approach that was taken to identify the sources for the literature review started out by conducting a handful of expert interviews at the RAND Corporation on the topic of attrition. This generated a list of relevant RAND publications, as well as some external sources. This work was also supplemented by online word searches using multiple databases to identify relevant articles in military-focused journals. We also drew on RAND experts in other fields and supplemented our online word searches to target a broader range of sources on related topics. Reviewing relevant work from adjacent fields suggested how the examination of attrition in a military context could benefit from insights from such fields as organization theory, management, education, and psychology.

Quantitative Analysis

Our quantitative research uses the Total Army Personnel Database–Active Enlisted (TAPDB-AE) to obtain deidentified data relating to soldiers who enlisted in the Army between fiscal years 2002 and 2013, totaling around 800,000 individuals. TAPDB-AE contains basic demographics, such as age, gender, and marital status. It also contains characteristics of enlistment, such as Armed Forces Qualification Test (AFQT) score and contract length. In addition, we can ascertain whether soldiers reached a modification table of organization and equipment (MTOE) unit and a combat unit, the outcome of their first-term enlistment, and the reason for separation if that was the outcome. We also include the unemployment rate of the soldier's home state at accession.²

² Unemployment rates are taken from the U.S. Department of Labor Bureau of Labor Statistics (U.S. Department of Labor Bureau of Labor Statistics, "Create Customized Tables," webpage, undated-a; U.S. Department of Labor Bureau of Labor Statistics, "download.bls.gov - /pub/time.series/la/," webpage, undated-b) and merged to the TAPDB-AE data based on the state in which a soldier went through Military Entrance Processing Station (MEPS).

Using the data set described above, we linked soldiers whose first assignment was to an MTOE unit to the senior enlisted leader for their first battalion headquarters company. We chose MTOE units because they are considered deployable, and their unit identification codes are standardized. We matched at the battalion level because, at this level, there is a unique senior noncommissioned officer (NCO) who could be identified in the available data; prior research also shows that this senior NCO has sizable and statistically significant effects on junior NCO outcomes.³ Our research is thus able to link unique enlisted leader pairs of soldiers to first battalions. This linkage enables a series of queries about battalion-level effects on soldier attrition in the first term. These methods are detailed in greater detail in Chapter Four.

Qualitative Analysis

Although the quantitative research is able to determine that battalion-level effects contribute to first-term attrition, additional research is needed to understand the underlying factors that could be driving the causal mechanisms by which this process occurs. The qualitative research presented in this report is a first exploration of these processes. We conducted semistructured interviews with both currently enlisted and separating soldiers at three installations chosen because of the presence of large numbers of first-term soldiers. We have withheld the installation names from this report because our findings are not intended to highlight problems at specific units or sites but rather to scan for problems that could occur anywhere. Our goal was to better understand the cultures of units from the soldier to the brigade level, as well as installation- and division-level culture issues, and the specific experiences of attriting soldiers. For each installation, the researchers requested access to

- the provost marshal
- the garrison chaplain.

For two chains of command, the researchers requested access to

- brigade officer in charge (OIC) or brigade noncommissioned officer in charge (NCOIC)
- battalion OIC or battalion NCOIC
- company OIC or company NCOIC
- section or squad enlisted leader
- three junior enlisted soldiers (nonseparating), one of whom is a woman (if available in unit)
- up to 15 junior enlisted soldiers in the process of administrative separation (chaptering) from the Army.

It is important to note that our request was not fulfilled consistently across all installations. In particular, the number of separating soldiers that we were able to speak to was far lower than our original request. Table 1.1 provides an aggregate summary of the number of interviews by type of interviewee that we conducted at each of the installations. The limitations stemming from this issue are discussed later in this chapter.

We also did not design our qualitative analysis to collect data in a way that would promote comparisons across units or comparisons within units (such as between unit leaders and

³ Jennie W. Wenger, Caolionn O’Connell, Louay Constant, and Andrew J. Lohn, *The Value of Experience in the Enlisted Force*, Santa Monica, Calif.: RAND Corporation, RR-2211-A, 2018.

Table 1.1
Number of Interviewees, by Installation

Installation	Currently Enlisted Soldiers	Separating Soldiers	Unit Leadership	Installation Leadership
Installation 1	7	5	6	2
Installation 2	8	3	1	1
Installation 3	12	1	0	2
Total	27	9	7	5

separating soldiers relative to unit leaders and currently enlisted soldiers). Our objective was exploratory, and we aimed to solicit insights on a wide variety of issues affecting the junior enlisted experience, from leadership and unit life to marriage and family considerations, from facilities and support at the installation to the general pace of life there. Interviews typically lasted approximately one hour. Because the focus of this portion of the study was hypothesis generation, the notes were not coded or otherwise structured. Instead, at the end of each site visit and after notes were completed and collated, each team member generated a list of findings and emergent themes. Through a process of iteration and consensus, the team agreed on the key themes across the installations. Ultimately, our priority was identifying as many explanatory pathways for attrition as possible, rather than on counting how many people gave which type of response. Our research thus identifies a large number of organizational attributes that may be deserving of additional study.

Caveats and Limitations

This is an exploratory look at the phenomenon of first-term Army attrition from an organizational perspective. It seeks to identify possible sources of variation in rates of attrition due to either aspects of Army organization or the interaction of individual attributes and Army organization. Much of the focus of this report is on determining whether organizational factors appear to be at play in attrition and on hypothesis generation to begin to guess at why. The generalizability of this research is limited.

As alluded to previously, we faced significant challenges in obtaining access to soldiers for semistructured interviews. This affected the analysis in several ways: First, because of significant delays in access to soldiers at two out of the three installations visited, the research team was unable to adopt a truly iterative approach between quantitative and qualitative methods. This limited our ability to verify the accuracy of claims advanced during interviews or to elicit possible explanations for patterns found in the data. Second, at the installations the research team was able to reach, access to soldiers fell short of the requested numbers and types of soldiers. In many cases, identifying separating soldiers was a challenge, and units were unable to supply the requested officers and enlisted personnel. Last, at one installation, we conducted group interviews with soldiers because of unanticipated scheduling and logistical challenges that precluded us from conducting individual interviews. This may have affected the level of detail we were able to delve into with each individual soldier. In no cases were soldiers interviewed with members of their chains of command. Because of the lower-than-expected num-

bers of interview respondents, readers should exercise caution when generalizing the report's findings stemming from the qualitative analysis.

Structure of This Report

The remainder of this report details our analytic process and findings. In Chapter Two, we argue that there is a shifting paradigm for attrition based on historical shifts in how it is viewed by the Army. In that chapter, we also suggest a typical narrative for the process of attrition. In Chapter Three, we provide descriptive information about our population of soldiers and explore, using observational analyses, the relationships between attrition and soldiers' individual attributes and certain organizational measures. In Chapter Four, we delve into our causal analysis in which we establish the existence of unit-level variation in attrition outcomes for first-term soldiers, discuss the scale of this effect, and find evidence for the significance of these differences to Army retention. We then begin to posit where unit-level explanations for first-term attrition may be found. In Chapter Five, we discuss the results of our exploratory qualitative analysis. Our interviews drew subjective interpretations of the causes of attrition that ranged from leadership to high operational tempo and from division-level culture to specific on-the-job issues. These results should be seen as generating hypotheses for future research into this subject. In our final chapter (Chapter Six), we offer conclusions and suggestions for further lines of research on this topic. It suggests that, by embracing the complexity of the attrition process as described here, a new approach to both studying attrition and reducing it may be found.

A Shifting Paradigm for Soldier Attrition

This report presents the results of exploratory research into a few possible organizational factors relating to attrition, but it also hints at an evolving paradigm for attrition that has implications for the emphasis the Army places on postaccession factors relative to recruitment and screening to mitigate soldier attrition. We offer this view of attrition as a framework to explain our results.

Attrition as it is commonly understood is a type of administrative separation from the Army that occurs before the end of an enlisted soldier's contract.¹ Attrition during the first term of service is of particular concern to the Army, in part because it is the most common time for soldiers to attrite and in part because it presents a particularly unfavorable balance of money, time, and effort invested in the soldier for a small result. Prior research on attrition has examined both individual and organization factors, drawing on longitudinal administrative data, as well as surveys and focus groups, to examine both the individual-level and organizational factors associated with attrition.² These studies have primarily been observational and are therefore suggestive rather than causal. This report makes use of the random assignment of soldiers to their first battalion to derive a causal interpretation of whether the “luck of the draw”—in terms of a soldier's first assignment and the particular senior NCO at the head of that assigned battalion—affects the observed variation across assignments in eventual first-term outcomes. Prior studies have noted problems with the Interservice Separation Code that is used to designate the type of separation.³ The way in which such administrative separations are recorded lends itself toward the notion of attrition as the Army ridding itself of an unsatisfactory soldier. Separation codes for attrition cases are typically listed as so-called involuntary separations in paperwork, coded with an infraction that was the proximate cause of a soldier's departure from the Army, such as failure to pass the Army Physical Fitness Test or drug use.

¹ *Administrative separation* is defined as, “Discharge or release from AD [active duty] upon expiration of enlistment or required period of service, or before, as prescribed by the Department of the Army or by law. Separation by sentence of a general or special court-martial is not an administrative separation.” U.S. Army Regulation 635-200, *Active Duty Enlisted Administrative Separations*, Washington, D.C.: U.S. Department of the Army, September 6, 2011, p. 131.

² See, for example William Strickland, ed., *A Longitudinal Examination of First Term Attrition and Reenlistment Among FY1999 Enlisted Accessions*, Arlington, Va.: U.S. Army Research Institute for the Behavioral and Social Sciences, 2005; Jennifer Lee Gibson, Joy Hackenbracht, and Trueman R. Tremble, “An Event History Analysis of First-Term Soldier Attrition,” *Military Psychology*, Vol. 26, No. 1, January 2014; J. A. Parrish, “The Prediction of Voluntary Resignation at Officer Candidate Schools,” *Educational and Psychological Measurement*, Vol. 17, No. 4, 1957; Richard Buddin, *The Role of Service Experience in Post-Training Attrition in the Army and Air Force*, Santa Monica, Calif.: RAND Corporation, R-2682-MRAL, 1981; Richard Buddin, *Analysis of Early Military Attrition Behavior*, Santa Monica, Calif.: RAND Corporation, R-3069-MIL, 1984.

³ Strickland, 2005.

A Vignette of First-Term Attrition

“Joe” grew up in Utah and joined the Army at age 19. His father is his role model, and when his dad was diagnosed with cancer soon after Joe graduated BCT, it was really hard for him to be away from family. He tried to make friends in the barracks but spends most of his free time FaceTiming with his family and his girlfriend back in Utah, so he hasn’t really bonded with the rest of the unit. Every time he gets a four-day weekend, he flies home, but tickets are expensive and it’s adding some financial stress on top of everything else. His first-line chain of command, “Sergeant Delgado,” sees that Joe has trouble bonding with the rest of the unit. He’s told Joe that he can take emergency leave if his dad takes a turn for the worse but doesn’t know how else to help. Joe got a 240 on his last physical training (PT) test, which makes him pretty middle of the pack, and the sergeant has to spend his little free time working with the soldiers who really need his help. Joe decides to fail his upcoming PT test on purpose, so he can get chaptered out. It’ll be faster than any other way he could leave. Although Delgado always thought Joe could be a decent soldier, he knows his priority is his family, and, honestly, he understands why Joe would want to leave. Delgado feels there are other soldiers who are better worth his limited time to help.

NOTE: This is a fictional story, derived from research and interviews, designed to illustrate the processes surrounding first-term attrition.

Consistent with previous research on this topic and Army nomenclature, our study is focused on a specific type of attrition, also referred to as *failure to adapt*. This is an umbrella term for an entire class of separations that does not include noncompletion of first enlistment term due to disability, commissioning, or other of the less commonly occurring reasons.

More-recent research argues that the traditional view of attrition oversimplifies a more complex process. It argues that a soldier’s likelihood of attrition is not determined simply by attributes and experiences prior to enlistment; instead, experiences inside the Army influence propensity to attrite. Attrition is best seen as a varied set of processes, rather than a single event, and there are numerous places in that process where interventions can affect outcomes. Also, the contractual nature of Army service masks a process that includes both quitting and firing behaviors and, in many cases, what is likely an iterative process between the two. That is to say, an infraction that results in a soldier being “fired” from the Army may, in fact, be the culmination of a longer process in which the soldier first chose to “quit” performing duties. Several soldiers described to us a descending spiral that began with a seemingly small problem but that, through an inability to marshal adequate help or support, resulted in the loss of the soldier to attrition.

Attrition in Historical and Scholarly Perspective

From the beginnings of American military history, the Army has dealt with problematic soldiers. In the days of the Revolutionary War, desertion was a capital and common crime, punished by hanging or firing squad; when leniency was judged appropriate, it was punished by corporal punishment that easily meets today’s criteria for torture. In few cases was the failure of

a soldier's performance of duties as required judged as anything other than a personal failure.⁴ In retrospect, it is clear that many desertions, particularly those that occurred in large numbers from the same unit, were due to extreme cold, illness and lack of access to care or relief, and chronic malnutrition, but these were not considered mitigating factors, and the offenses were punished as individual moral failures.⁵

By the conclusion of the First World War, the treatment of soldiers who failed to adapt adequately to life in the Army had become more humane, but the mindset around the qualities that led to success and failure were largely unchanged. Leveraging advancements in the field of psychometrics and responding to the increasingly complex technical demands of many weapon systems, the Army developed screening and testing instruments generally designed to measure physical and mental aptitude. In some instances, the Army also attempted to discern potential recruits who were capable of courage and self-mastery while in physical peril.⁶ By the summer of 1918, the Army had established remedial battalions to which inadequate soldiers were referred, and which were “promptly to rid the service of all men who, after thorough trial and examination are found physically, mentally, or morally incapable of performing duties of a soldier.”⁷

Modern research on attrition in the U.S. military dates back to the 1950s, driven by the rise of management science and the study of personnel in both private and other public organizations and by the development of a large standing military that could benefit from the application of modern management analysis. Much of this work implicitly assumed that attrition was a product of qualities of the individuals who attrite and focused on how to identify those individuals most likely to attrite, ideally before selection, because of the costs of recruiting and training servicemembers who did not complete their first term. An early example of this literature is a study into resignations among officers during their first term in the early 1950s, a period during which one-fifth of Officer Candidate School graduates, and only slightly fewer military academy graduates, resigned before serving out the time for which they had initially contracted. Motivation was found in that study to be a key predictor.⁸

One factor prompting new attention to personnel issues in the post-Second World War military was an ongoing and significant shift in the sources and nature of authority in U.S. society—and in particular in the military. In 1959, Janowitz wrote about the dynamics driving an evolution from discipline based on domination to discipline based on manipulation in the U.S. military. The end of closed-order infantry—which relied on rigid discipline and coordination, while open-order infantry relied on initiative and individual and small-unit decisionmaking—was one contributor, as was the rise in missiles and nuclear weapons, which required a workforce much more like that in the civilian world with respect to training and daily routines. The increased importance of deterrence required that the most-senior NCOs

⁴ Caroline Helen Cox, *“A Proper Sense of Honor”: The Status of Soldiers and Officers of the Continental Army, 1775–1783*, Berkeley: University of California, Berkeley, 1997.

⁵ Charles Patrick Neimeyer, *The Revolutionary War*, Westport, Conn.: Greenwood Publishing Group, 2007.

⁶ Woodworth's research into these traits in the Army were later generalized and published as a popular book; see Robert Sessions Woodworth, *Adjustment and Mastery: Problems in Psychology*, Baltimore, Md.: Williams & Wilkins Company, 1933.

⁷ Julius E. Uhlaner, *The Research Psychologist in the Army—1917 to 1977*, Alexandria, Va.: U.S. Army Research Institute for the Behavioral and Social Sciences, October 1977.

⁸ Parrish, 1957.

in the military have an enhanced understanding of politics, culture, and diplomacy, and this awareness filtered down, while the social mobility of the civilian world filtered in, per Janowitz. When success as a soldier depended less on sheer compliance and more on group identity and teamwork, the personalities and cognitive and social abilities of enlisted and officers alike gained new importance.⁹

An exchange in *Armed Forces and Society* in 1976 and 1977 takes as its starting point this shift from an officer class that is “gladiatorial” and based on “honor,” as Savage and Gabriel label Janowitz’ earlier dynamic, to a managerial approach.¹⁰ The authors condemn this, blaming the rise of managerial careerists unwilling to die for their men for the disintegration of the Army in Vietnam. Under this new orientation, they argue, “a managerial ‘commander’ may tend to see troops as a resource base of potential career survival and profitability, not as a moral charge on his honor and duty rested in reciprocal trust and self-sacrifice.”¹¹

Military Research on Individual Attributes and Attrition

There are several studies that have investigated the factors linked to Army attrition in the post-1973 All Volunteer Force. Buddin conducted empirical investigations using personnel records, in some cases analyzed alongside qualitative work on recruitment and attrition. Buddin’s findings fall into three broad categories: qualities of individual recruits; their experiences during recruitment, training, and first enlistment; and the wider socioeconomic context. In some cases, his work drew on the other military services as well.¹² These findings are summarized in Table 2.1. Buddin’s work on individual characteristics prior to enlistment revealed some factors that have consistently been linked with attrition, some whose relationship with attrition has evolved, and some that do not influence attrition once other variables are taken into account. Buddin’s empirical research suggests the following key determinants. Age at enlistment was significant: Recruits who enlisted in the Army before the age of 18 had attrition rates 5 to 7 percent higher than those who joined after 18. Having less than a high school diploma was linked to a 10 percent higher attrition rate, and, in the combat arms, lower AFQT scores were correlated with higher attrition. Women had higher attrition rates than men, and race was not a significant predictor of attrition except in the (then all-male) combat arms, in which Black soldiers were 4 percent less likely to attrite than White soldiers. Marriage, reasonably uncommon in first-term enlistees in the late 1970s and early 1980s, was associated with lower attrition, while parenthood offset this reduction. These individual factors had a consistent effect across services, military occupational specialties (MOSs), and duty stations, although the magnitude of the effects varied.

⁹ Morris Janowitz, “Changing Patterns of Organizational Authority: The Military Establishment,” *Administrative Science Quarterly*, Vol. 3, No. 4, 1959.

¹⁰ Paul L. Savage and Richard A. Gabriel, “Cohesion and Disintegration in the American Army: An Alternative Perspective,” *Armed Forces and Society*, Vol. 2, No. 3, 1976; John H. Faris, “An Alternative Perspective to Savage and Gabriel,” *Armed Forces and Society*, Vol. 3, No. 3, 1977.

¹¹ Savage and Gabriel, 1976, p. 340.

¹² Buddin, 1981; Buddin, 1984; Richard Buddin, *Success of First-Term Soldiers: The Effects of Recruiting Practices and Recruit Characteristics*, Santa Monica, Calif.: RAND Corporation, MG-262-A, 2005.

Table 2.1
Summary of Work on the Influence of Individual Attributes on Attrition

Individual Attribute	Relationship to Attrition
Age	Varied
Gender	Females (+)
Education	Less than high school (+)
AFQT	None
Race/ethnicity	None
Marital status	Married (-)
Dependents	Have dependents (+)
DEP	More time in DEP (-)
MOS	Varied
Unit	Varied
Installation	Varied
Unemployment rate	Higher unemployment rate (+)

SOURCE: Based on a summary of work by Buddin, 1981; Buddin, 1984; Buddin, 2005.

With respect to factors during recruitment and the first enlistment, more time in the Delayed Entry Program (DEP) was linked with reduced attrition. This is in part because many potential recruits in the DEP are exposed to training and acculturation that prepares them for basic training and in part because recruits who spent more time in the DEP were likely to have opted to wait for their preferred MOSs rather than taking the first available contract regardless of MOS. Attrition varied by unit and installation, indicating that command climate and the local environment influenced how soldiers adapted during their first enlistments. Buddin also found that attrition rates were higher for soldiers in combat MOSs. Various forms of MOS instability were also linked with higher attrition, across all occupations. Time spent away from the MOS due to disciplinary action was the most strongly linked with attrition. When soldiers were assigned to MOSs without the corresponding training, they also were more likely to attrite, although it is unclear the degree to which mismatched expectations contributed to the failure to adapt, as opposed to poorer performance due to lack of training. In the aggregate, retraining for a new MOS was not linked with changes in attrition rates. However, when MOS changes are separated into those initiated by the soldier, presumably in search of a better fit, and those initiated by a superior, the first group experienced lower attrition than the second. Buddin's work clarifies that, combined with the effect of a longer period in the DEP on lowering attrition rates, in part because of improved soldier-MOS fit, an appropriate match between soldiers and occupations reduces attrition.

When examining attrition in the context of broader economic factors and comparisons with civilian employment, Buddin found that unemployment or unstable employment was linked with higher attrition, particularly when the economy was weaker. His analysis suggested that the inability to find or keep a job in a stronger economic climate might indicate personal deficits of discipline or diligence, which might impede success in the Army as well.

In a weaker economy, recruits were more likely to have been motivated by the absence of other employment options than by the desire to enlist, leading to difficulties adapting. When compared with quitting and firing patterns in entry-level positions in civilian employment, previous unstable employment history had comparable effects in first-enlistment attrition. In three ways, though, individual characteristics had different implications for attrition or leaving the job in the military and civilian workplaces. Although lack of education correlated with higher attrition in both, the effect was stronger in the military. Job satisfaction correlates with lower attrition in both, but the effect was stronger in the civilian workforce. And although age at hiring increases employment stability in the civilian world, the findings were more nuanced for Army enlistees: Buddin found that BCT attrition and early attrition were higher for older recruits, but older recruits were also associated with lower first-term attrition.

Other studies have examined the role of mental health and attrition outcomes. For example, studies have examined the effect of mental health conditions, the granting of waivers, and the emergence of mental health conditions after enlistment on attrition. Cigrang and coauthors examined the medical records of 1,138 recruits referred for psychological evaluation during the six-week basic military training course at Lackland Air Force Base to determine why recruits are separated for medical reasons and what the U.S. Air Force can do to reduce these numbers.¹³ They find that the majority of mental health separations reflect conditions or actions present prior to enlistment (recurrent depression, suicidal ideation or attempts, etc.), and recommend that more effort should be dedicated to screening for these conditions and to promoting full disclosure among potential recruits. In two areas, though, they highlight where discretion exists: in the information recruiters provide and in units' efforts to help recruits succeed despite mental health hindrances. Thus, treatment during training influences the success of these soldiers. Adjustment disorder is the one condition that is frequently diagnosed both in the discharged group and in the group recommended for return to duty. In contrast with medical diagnoses that are sufficient for separation, adjustment disorder causes the psychologist or psychiatrist making the determination to evaluate recruit motivation, severity and manifestation of difficulty adjusting, and whether the stressors of posttraining military life are likely to provoke the same inability to adapt as training. Several recruits were referred to mental health services for issues related to a history of abuse, and the researchers recommended changing both the information given to recruits in their initial week of orientation and the way in which instructors respond to signs of abuse-related trauma.

Research on the Effect of Leadership on Attrition

There has been growing interest on the part of the Army to leverage leadership resources to reduce attrition. A 2004 report by the U.S. Army Center for Health Promotion and Prevention Medicine suggests a number of strategies that the Army can take to reduce attrition. Although the risk factors listed are primarily individual-level factors, including individual attributes and risk-taking behaviors, among the strategies recommended is a closer look at "leadership policy, attitudes, and belief." Certainly, policies issued by Army leadership that emphasize the impor-

¹³ Jeffrey A. Cigrang, Eric G. Carbone, Sandra Todd, and Edna Fiedler, "Mental Health Attrition from Air Force Basic Military Training," *Military Medicine*, Vol. 163, No. 12, 1998.

tance of minimizing attrition plays a role, but so do the attitudes and beliefs of Army leaders in terms of whether they think that they can influence attrition.¹⁴

Experience is one potential measure of leadership feelings of agency when it comes to mitigating attrition. A study of senior NCO traits and attrition found that, after controlling for the individual characteristics of first-term soldiers, more-experienced NCOs, up to a threshold level of experience, were associated with lower rates of attrition among the soldiers they oversaw.¹⁵ Senior NCOs with more than 20 months but fewer than 40 months of deployment, at least 22 but no more than 25 years of service, and who promoted faster than average but not in the fastest-promoting 15 percent all had the best results in terms of lowered attrition. The authors theorized that the fastest-promoting senior NCOs would by definition have less experience, while the slowest-promoting senior NCOs, while having more experience, likely were lacking in some aptitudes or skills. The quantitative analysis conducted in this study leveraged the same approach taken in that study to assembling the personnel records that link junior enlisted soldiers with their NCOs.

Related Research from Other Fields

The degree to which the match between supervisors and employees, and teachers and students, influences outcomes in other fields has been studied much more widely than the equivalent dynamics in the military. The relationship between principals and teachers has been found to have a direct effect on educational and organizational outcomes, with the most important mechanism being communication and shared expectations between principals, experienced teachers, and novice teachers. More broadly, the school culture established by leadership and especially the principal is linked with higher teacher satisfaction and commitment and perceived school cohesion and identity.¹⁶ Principal experience within the same school district is the only demographic variable linked with lower teacher attrition, while leadership philosophies that emphasize proactive support and communication are correlated with higher teacher retention and better outcomes.¹⁷

Work on principal and teacher factors that correlate with student dropout rates, another way of framing attrition, similarly shows that teaching, leadership, and management styles play a critical role. Principals who include teachers in decisionmaking, are comfortable devolving authority, and practice a loose-tight style of management (in which teachers are expected to be high performers and are empowered to choose their own courses of action) are associated with

¹⁴ Joseph J. Knapik, Bruce H. Jones, Keith Hauret, Salima Darakjy, and Eugene Piskator, *A Review of the Literature on Attrition from the Military Services: Risk Factors for Attrition and Strategies to Reduce Attrition*, Aberdeen Proving Ground, Md.; Ft. Knox, Ky.: U.S. Army Center for Health Promotion and Preventive Medicine; Center for Accessions Research, 2004.

¹⁵ Wenger et al., 2018.

¹⁶ Heather E. Price, "Principal-Teacher Interactions: How Affective Relationships Shape Principal and Teacher Attitudes," *Educational Administration Quarterly*, Vol. 48, No. 1, 2012.

¹⁷ Kathleen M. Brown and Susan R. Wynn, "Finding, Supporting, and Keeping: The Role of the Principal in Teacher Retention Issues," *Leadership and Policy in Schools*, Vol. 8, No. 1, 2009; Linda Darling-Hammond, "Keeping Good Teachers: Why It Matters, What Leaders Can Do," *Educational Leadership*, Vol. 60, No. 8, 2003.

lower dropout rates.¹⁸ With respect to relationships with students, teachers willing to engage with students both on socioemotional issues and on matters related to the curriculum lead to better outcomes, while principals who proactively support at-risk students and who frame their relationship with such students as collaborative and supportive, rather than adversarial or directive, saw lower dropout rates.¹⁹

Other research has sought to distinguish between different types of workplace experiences and address inconsistent findings in the literature on how workplace stress affects employee turnover. Conducting a meta-analysis, Podsakoff, LePine, and LePine find that, although workplace stress that hinders job performance (e.g., having insufficient resources to do the job) is associated with higher levels of employee turnover, workplace stress emanating from experiences that challenge employees in a positive way (e.g., tasks that allow for learning new skills) has the opposite effect on turnover.²⁰

Still other research on attrition is often linked to behaviors not directly included in “workday” responsibilities. The literature from other fields that we reviewed does not directly address attrition per se but allows us to frame the context by which a soldier feels a part of an organization or enterprise (the Army) or, conversely, does not feel a sense of belonging. That feeling of organizational belonging, or lack thereof, could explain why soldiers attrite. Similarly, the management science literature focuses on factors other than job performance that make someone a good or successful employee, or the opposite, often framing the issue as one of organizational citizenship behavior (OCB) and workplace deviance behavior (WDB). OCB consists of desirable behaviors that are not directly related to job tasks but contribute to the social and organizational context of the job. These include volunteering for activities that are of specific or general benefit to the organization, volunteering to help other workers, and upholding workplace norms even when they do not directly involve the worker.²¹ OCB can be further divided into individual OCB (e.g., assisting other workers and being flexible in scheduling to help others with out-of-work commitments) and organizational OCB (attending group functions that are not mandatory, expressing pride in the organization, and demonstrating concern about the image of the organization).²²

¹⁸ Joseph Blase and Peggy C. Kirby, *Bringing Out the Best in Teachers: What Effective Principals Do*, Thousand Oaks, Calif.: Corwin Press, 2008; John P. Barile, Dana K. Donohue, Elizabeth R. Anthony, Andrew M. Baker, Scott R. Weaver, and Christopher C. Henrich, “Teacher–Student Relationship Climate and School Outcomes: Implications for Educational Policy Initiatives,” *Journal of Youth and Adolescence*, Vol. 41, No. 3, 2012.

¹⁹ John M. Bridgeland, John J. Dilulio Jr., and Robert Balfanz, “The High School Dropout Problem: Perspectives of Teachers and Principals,” *Education Digest*, Vol. 75, No. 3, November 2009b; John M. Bridgeland, John J. Dilulio Jr., and Robert Balfanz, *On the Front Lines of Schools: Perspectives of Teachers and Principals on the High School Dropout Problem*, Washington, D.C.: Civic Enterprises, June 2009a; John M. Bridgeland, Robert Balfanz, Laura A. Moore, and Rebecca S. Friant, *Raising Their Voices: Engaging Students, Teachers, and Parents to Help End the High School Dropout Epidemic*, Washington, D.C.: Civic Enterprises, March 2010.

²⁰ Podsakoff, Nathan P., Jeffery A. LePine, and Marcie A. LePine, “Differential Challenge Stressor–Hindrance Stressor Relationships with Job Attitudes, Turnover Intentions, Turnover, and Withdrawal Behavior: A Meta-Analysis,” *Journal of Applied Psychology*, Vol. 92, No. 2, 2007.

²¹ Dennis W. Organ and Katherine Ryan, “A Meta-Analytic Review of Attitudinal and Dispositional Predictors of Organizational Citizenship Behavior,” *Personnel Psychology*, Vol. 48, No. 4, 1995.

²² Kibeom Lee and Natalie J. Allen, “Organizational Citizenship Behavior and Workplace Deviance: The Role of Affect and Cognitions,” *Journal of Applied Psychology*, Vol. 87, No. 1, 2002.

WDB is behavior that violates significant norms in a manner that jeopardizes some element of the well-being of the organization or its members. It can be passive, in the sense of failing to comply with a normative expectation, or active, in the deliberate violation of expectations. More than OCB, WDB exists in relation to the culture of the organization in question. Bullying a coworker may be ethically wrong, but if the culture of the workplace tacitly or explicitly tolerates, or even promotes, bullying, it is a different phenomenon from WDB.²³ When attrition is linked to bad behavior, either by the soldier who attrites or by a supervisor or peer who mistreats the soldier who attrites, exploring the degree to which the bad behavior was normative for the unit or installation is relevant to understanding the process leading to attrition.

In the next chapter, we investigate these issues in the data. We explore the relationships between individual soldier attributes and attrition, updating the work done by Buddin and others. We then build on the work conducted by Wenger and colleagues linking junior enlisted soldiers to their leaders to investigate the effect of command culture on the attrition of soldiers who are otherwise similar except for the unit to which they were assigned.²⁴

²³ Sandra L. Robinson and Rebecca J. Bennett, "A Typology of Deviant Workplace Behaviors: A Multidimensional Scaling Study," *Academy of Management Journal*, Vol. 38, No. 2, 1995.

²⁴ Wenger et al., 2018.

Examining the Influence of Soldier Attributes and Organizational Factors on Attrition

In this chapter, we describe our population of interest and full sample of data and provide our findings from examining the relationship between first-term attrition and individual soldier attributes and organizational factors. This chapter describes the main patterns of early attrition across the Army in the period covering the Global War on Terror. This analysis largely replicates an earlier one of attrition patterns, using updated data to highlight individual demographic characteristics and organizational measures that are highly correlated with a soldier's probability of separating early.¹

Following this chapter, we delve into the causal analysis that subsets our soldier population into those who can be linked to their leaders. The rationale and method for conducting the linkage is explained in the next chapter.

Data

We utilized the TAPDB-AE to examine our population of interest. TAPDB-AE contains information about every active enlisted soldier. Our population of interest consists of those who entered between fiscal years 2002 and 2013, totaling around 800,000 individuals. This time frame ensures that we are able to observe the entire first term for all soldiers, allowing us to verify whether they separate early (and why they do so), whether they leave at the completion of their term, or whether they reenlist.

TAPDB-AE contains detailed information about each soldier, including basic demographics (age, gender, race, marital status, and number of dependents), education (highest degree attained), and characteristics of enlistment (AFQT score, contract length, whether the soldier received a bonus, MOS and CMF, and pay grade on entry). These characteristics are captured both at accession and over time. We primarily conditioned on characteristics at accession for this analysis, but some variables could be observed only after accession, such as BCT location and the characteristics of a soldier's first senior NCO. In addition, we were able to ascertain whether or not a soldier reached an MTOE unit and a combat unit, the outcome of the first-term enlistment, and the reason for separation if that was the outcome. In addition to individual-level factors, we captured variables that describe the context in which soldiers are situated. These include the location where they underwent basic training and the unemploy-

¹ Buddin, 2005.

ment rate of their home state.² Importantly, TAPDB-AE also includes a unit identification code (UIC) that indicates a soldier's unit assignment each month and a separation code that records the reason a soldier exits the regular service (if applicable).

We categorized individuals based on the outcome of their first term, using four mutually exclusive groups: early attrition due to failure to adapt; separation due to disability, missing in action (MIA), or killed in action (KIA); reenlistment; and all other outcomes. *Failure to adapt* includes separations with codes indicating an inability to perform up to Army standards, including but not limited to Army Physical Fitness Test failure, drug use, or misconduct. Other outcomes include exiting at the end of the first term or moving to officer status; we did not examine these outcomes specifically.

Although our key outcome variable is first-term attrition due to failure to adapt, we provide descriptive information about three types of first-term attrition outcomes based on the time point at which attrition occurs: (1) BCT attrition (in the first three months), (2) early-term Attrition (in the first six months), and (3) first-term attrition (at any point in the first term). Consistent with past research, attrition rates are coded cumulatively. Therefore, if attrition occurs during BCT, then that soldier is also considered to have attrited at early term and first term.³

We created a summary data set for each soldier in the 2002–2013 cohorts that captures individual characteristics at entry, as well as certain characteristics of enlistment prior to separation or prior to reenlistment (e.g., last installation where a soldier was located). The mean and standard deviation of the main characteristics are provided in Appendix A (Table A.1). The first two columns with the statistics reveal the mean and standard deviation for the full sample, and the third and fourth columns reveal the mean and standard deviation for the subsample of soldiers assigned to MTOE units who were matched to a senior NCO. Our total population of interest is 17 percent female, the average age is around 21.6 years, and the population is primarily single (82 percent never married on accession). Most soldiers enlist with no dependents (80 percent), and 91 percent have a high school diploma. The enlisted force is 65 percent White, followed by 17 percent Black, 12 percent Hispanic, 4 percent Asian, and 1 percent Native American. Around 66 percent of enlistees are in the AFQT Category I to IIIA, and 45 percent receive an enlistment bonus. Close to 80 percent of enlistees have a three- or four-year contract term, and about half come in as E1s and a quarter come in as E2s. Around 37 percent enlist in a combat-related MOS. Half of enlistees are from states with an unemployment rate of 5 to 7 percent in the year the soldier went through MEPS. For basic training, most enlistees went to either Fort Jackson (around 33 percent) or Fort Benning (29 percent). Around 3 percent of soldiers attrite during BCT, 10 percent in the first six months, and 30 percent in the first term.

² Unemployment rates are taken from the U.S. Department of Labor Bureau of Labor Statistics (undated-a and undated-b) and merged to the TAPDB-AE data based on the state and year in which a soldier went through MEPS.

³ *Attrition* is defined and derived based on past work on the subject (Buddin, 2005). The main difference is that we focus on attrition because of failure to adapt rather than separation generally.

Descriptive Analysis of First-Term Failure to Adapt Attrition

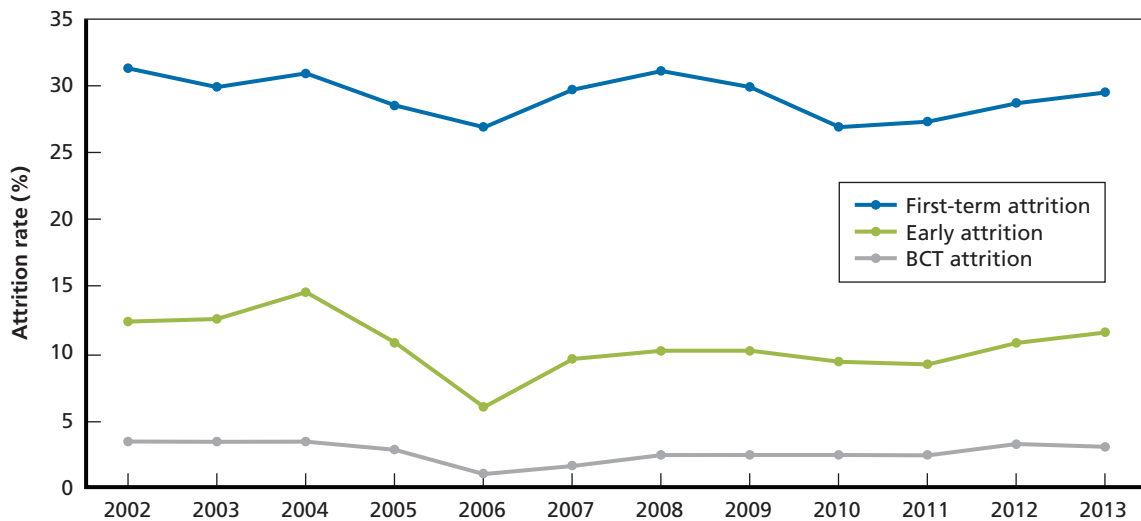
Figure 3.1 illustrates attrition rates due to failure to adapt for accessions in each fiscal year, sorted by the timing of attrition since accession. BCT attrition due to failure to adapt ranges between 1 and 3 percent for cohorts 2002 to 2013. Early-term attrition ranges between a low of 6 percent (fiscal year 2006) and a high of 14 percent (fiscal year 2004).⁴ Failure to adapt in the first term rises to around 30 percent, with slightly lower rates for the 2006 accessions and slightly higher rates for the 2004 and 2008 accessions.

Factors Associated with First-Term Failure to Adapt

To explore the relationships between first-term attrition and soldier individual and organizational attributes, we began by estimating simple linear logit models of the attrition outcome and the characteristics of soldiers and their military experiences. We present these results as odds ratios in graphical form.⁵ Because many of the covariates are categorical variables, we chose a category to exclude and interpret the findings relative to that excluded category. An odds ratio of greater than 1 means that this particular category is associated with higher odds of failing to adapt, while an odds ratio of less than 1 indicates that this category had lower odds of failure to adapt than the excluded category.

The impact of the regression on the full set of covariates suggests that individual-level factors are statistically significant drivers of first-term failure to adapt. Compared with individuals who enter the Army between ages 17 and 20, individuals who enter between ages 21 and 25

Figure 3.1
Failure to Adapt Rates by Fiscal Year of Accession and Timing of Attrition



SOURCE: RAND Arroyo Center calculations from TAPDB-AE data.

⁴ The drop in early attrition from 2003 to 2006 is not readily explained, but there could be a number of factors. For one, this was the period leading up to the surge in Iraq, which led to an increase in the force and pressure on both recruitment and reducing attrition. Attrition rates in general went down, though early attrition rates as we define them were affected more. It is also possible that the data may be problematic during this period.

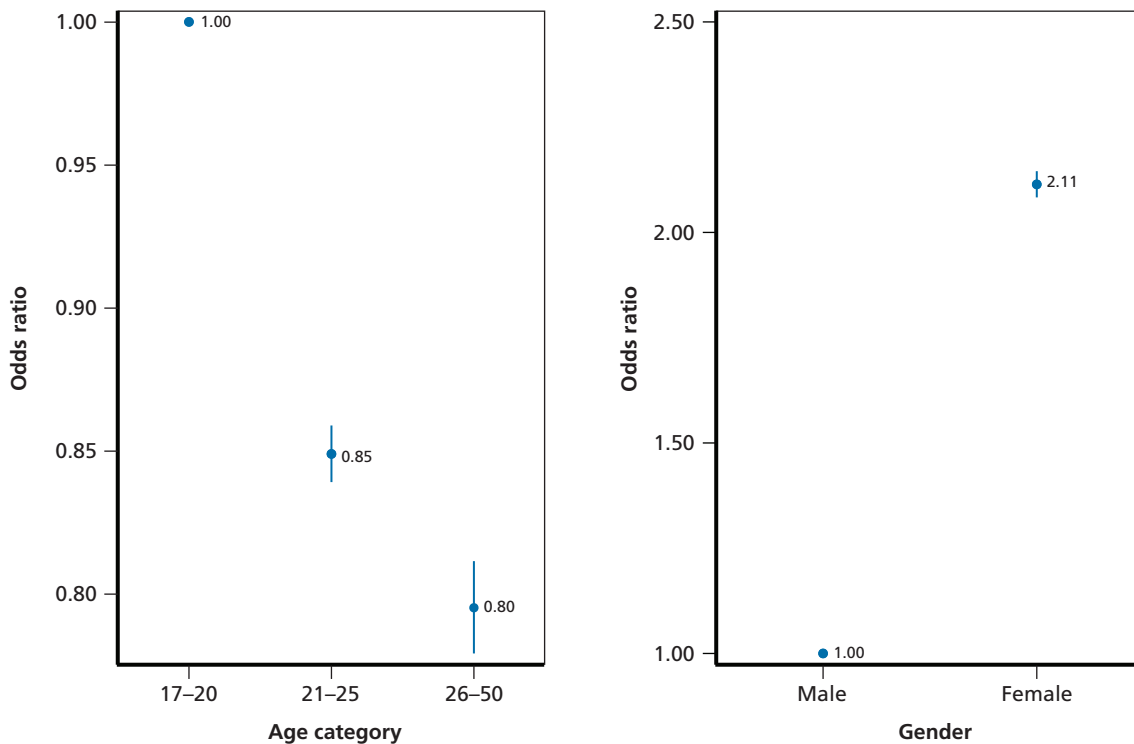
⁵ In Appendix B (Figures B.1 to B.9), the results are presented as first-term attrition predictions by the same set of covariates.

have 15 percent lower odds of failing to adapt in the first term, and those age 26 or older have 20 percent lower odds of attriting because of failure to adapt (Figure 3.2). For example, the predicted attrition rate for the youngest group is estimated at around 30 percent, whereas it is approximately 26 percent for the oldest group (Appendix B, Figure B.1). Female recruits are more than twice as likely to attrite as male recruits.

In general, more-educated recruits have lower odds of attriting. Compared with high school graduates, GED graduates have higher odds of attriting (9 percent), whereas those with some college education or a college degree are less likely to attrite by 16 percent and 21 percent, respectively (Figure 3.3). GED holders have slightly higher predicted first-term attrition rates (30 percent), compared with high school diploma graduates (29 percent). Postsecondary education completers have predicted attrition rates of 25 percent for a holder of an associate's degree and 24 percent for a college graduate (Appendix B, Figure B.2).

Relative to White soldiers, minorities, including Black, Hispanic, and Asian, are associated with lower rates of failure to adapt. Black enlistees have 10 percent lower odds of attrition, Hispanic enlistees have 31 percent lower odds of attrition, and Asian enlistees have 38 percent lower odds of attrition because of failure to adapt, compared with White enlistees (Figure 3.4). Predicted first-term attrition rates are around 30 percent for White enlistees, compared with 23 percent for Hispanic enlistees, 28 percent for Black enlistees, and 21 percent for Asian enlistees (Appendix B, Figure B.3).

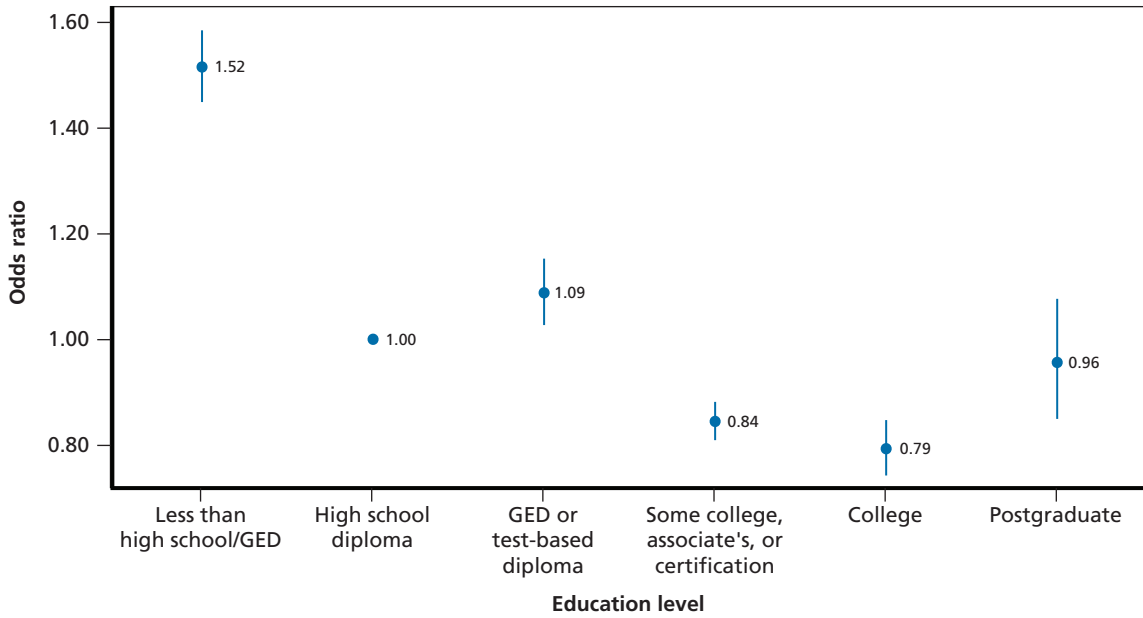
Figure 3.2
Relationship Between Age and Gender with First-Term Failure to Adapt (Odds Ratios)



SOURCE: RAND Arroyo Center calculations from TAPDB-AE data.

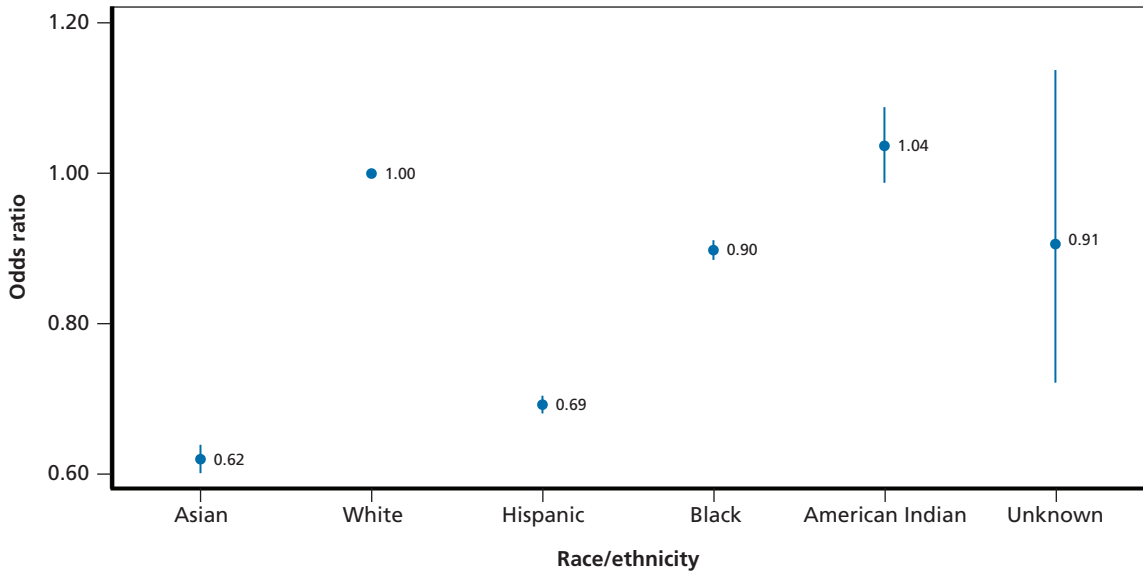
NOTE: Vertical bars show 95 percent confidence intervals.

Figure 3.3
Relationship Between Education Level and First-Term Failure to Adapt (Odds Ratios)



SOURCE: RAND Arroyo Center calculations from TAPDB-AE data.
 NOTE: Vertical bars show 95 percent confidence intervals.

Figure 3.4
Relationship Between Race/Ethnicity and First-Term Failure to Adapt (Odds Ratios)



SOURCE: RAND Arroyo Center calculations from TAPDB-AE data.
 NOTE: Vertical bars show 95 percent confidence intervals.

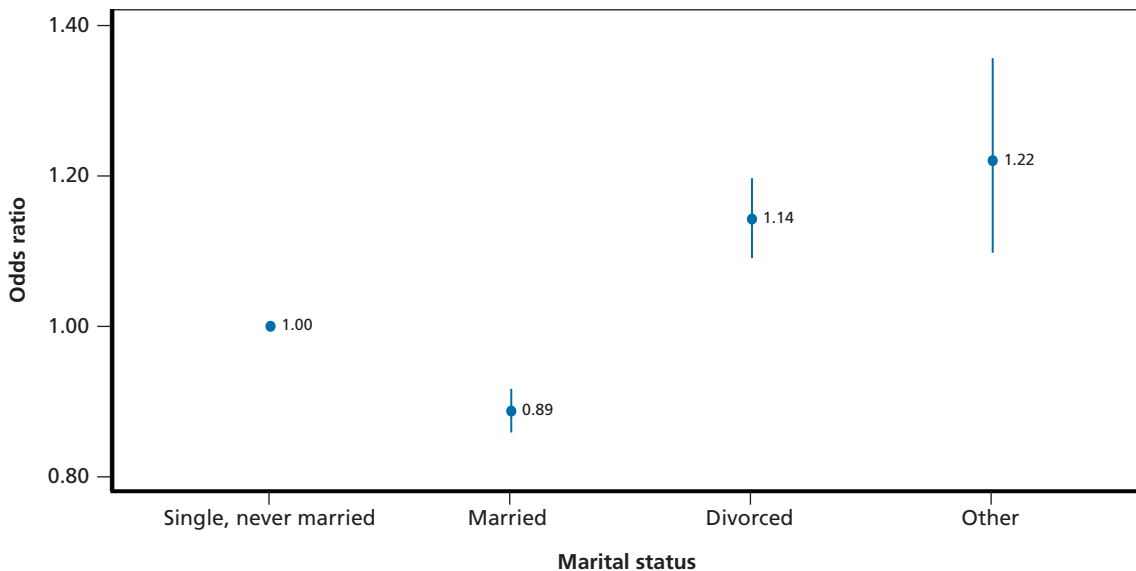
Being married at the time of accession is associated with 11 percent lower odds of attrition because of failure to adapt than single, never married individuals (Figure 3.5). Predicted first-term attrition rates are approximately 26 percent for married individuals, compared with 29 percent for singles (Appendix B, Figure B.4).

On the other hand, having dependents is associated with a higher likelihood of attrition (Figure 3.6). The predicted first-term attrition rate for soldiers entering with no dependents is estimated at 28 percent, compared with 31–32 percent with individuals with one to three dependents (Appendix B, Figure B.5). There are no statistically significant differences in attrition for soldiers with one or more dependents.

Compared with individuals in the AFQT Category I, the highest-achieving category, failure-to-adapt rates are higher among soldiers falling in the remaining AFQT categories: around 32 percent higher odds of attrition for AFQT Category II, a little over 50 percent higher odds for AFQT Categories IIIA and IIIB, and 35 percent higher odds of attrition for AFQT Category IV (Figure 3.7). Attrition rates are also higher for longer contract terms, with around 1.6 and 2.2 times for three- or four-year and five- or six-year terms, compared with the shortest, a one- or two-year contract term (Figure 3.7). Individuals who score in the highest category (Category I) have around a 22 percent predicted attrition rate compared with 30 percent for individuals in the Category IIIA and IIIB groups (Appendix B, Figure B.6).

A longer term of service is associated with a higher rate of first-term attrition (Figure 3.8). The typical term of service of three–four years has an estimated predicted first-term attrition rate of 27 percent. This compares with a shorter term of service (one–two years), with an estimated predicted attrition rate of 19 percent and 35 percent for those with longer five–six-year terms of service (Appendix B, Figure B.7).

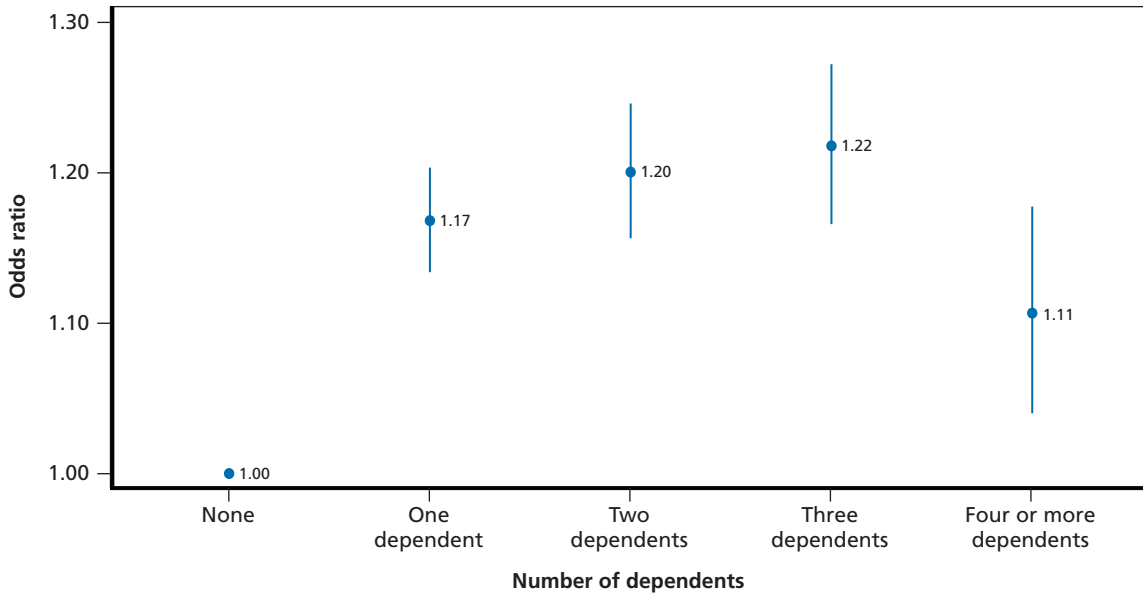
Figure 3.5
Relationship Between Marital Status and First-Term Failure to Adapt (Odds Ratios)



SOURCE: RAND Arroyo Center calculations from TAPDB-AE data.

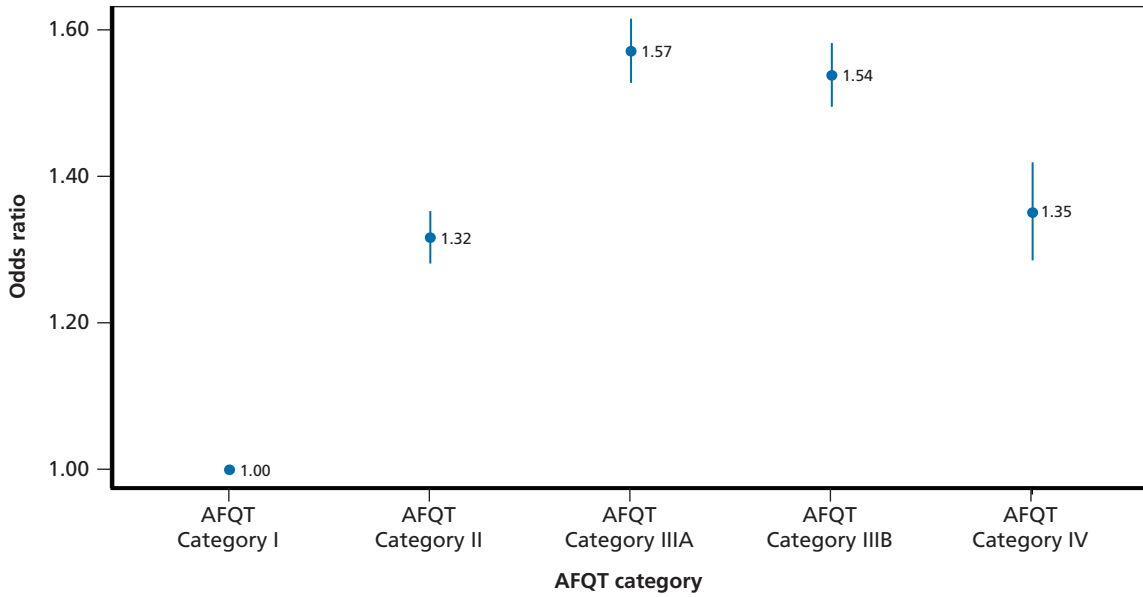
NOTE: Vertical bars show 95 percent confidence intervals.

Figure 3.6
Relationship Between Number of Dependents and First-Term Failure to Adapt (Odds Ratios)



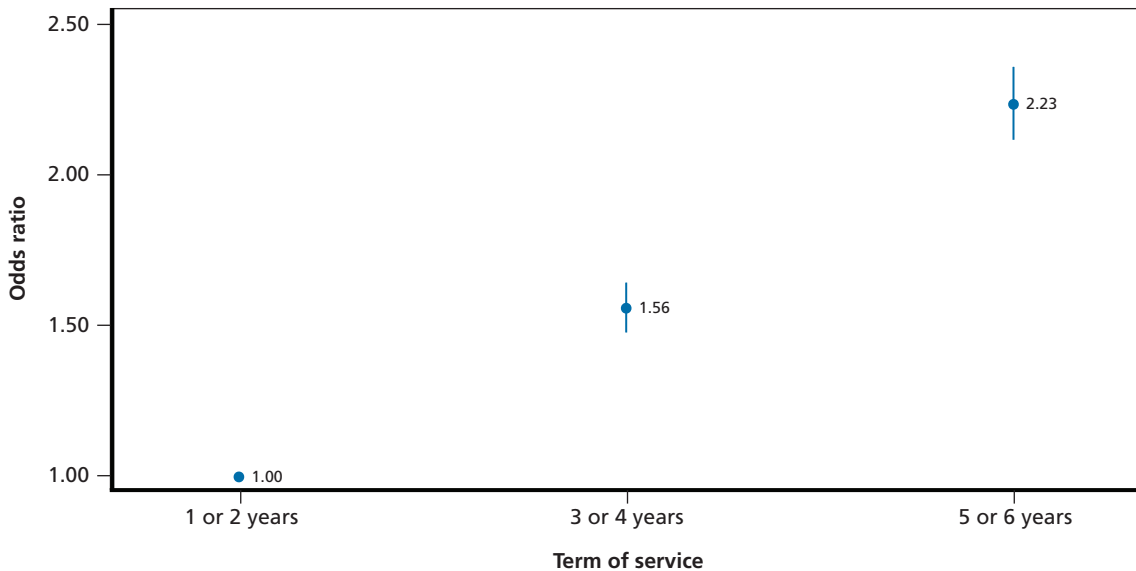
SOURCE: RAND Arroyo Center calculations from TAPDB-AE data.
 NOTE: Vertical bars show 95 percent confidence intervals.

Figure 3.7
Relationship Between AFQT Category and First-Term Failure to Adapt (Odds Ratios)



SOURCE: RAND Arroyo Center calculations from TAPDB-AE data.
 NOTE: Vertical bars show 95 percent confidence intervals.

Figure 3.8
Relationship Between Terms of Service and First-Term Failure to Adapt (Odds Ratios)

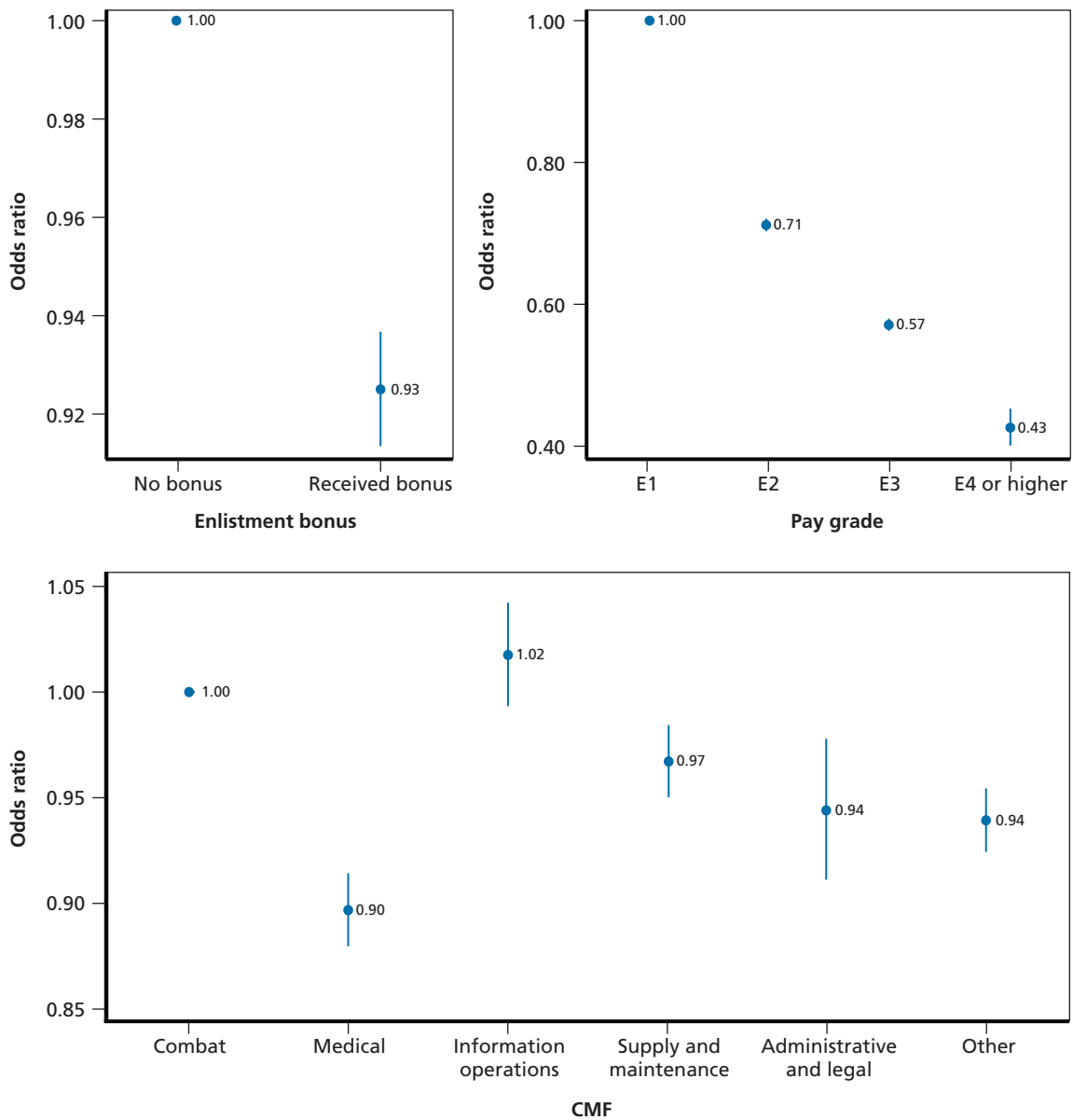


SOURCE: RAND Arroyo Center calculations from TAPDB-AE data.
 NOTE: Vertical bars show 95 percent confidence intervals.

Enlistees who receive a bonus are associated with a lower likelihood of failing to adapt by 7 percent (Figure 3.9). Predicted first-term attrition rates are 28 percent for those who receive a bonus, compared with 29 percent for those who do not (Appendix B, Figure B.8). Coming in at a higher pay grade is associated with a significantly lower likelihood of failure to adapt—E2s, E3s, and E4s have 29 percent, 43 percent, and 57 percent lower odds of attrition because of failure to adapt than a soldier coming in as an E1 (Figure 3.9). Predicted first-term attrition rates range from 34 percent for E1s to 27 percent for E2s, 23 percent for E3s, and 18 percent for E4s and higher pay grades (Appendix B, Figure B.8). In general, noncombat CMFs have lower odds of attrition than combat CMFs. Combat CMFs have predicted attrition rates of 29 percent, compared with a noncombat CMF, such as medical (27 percent), supply and maintenance (28 percent), and administrative and legal (28 percent) (Appendix B, Figure B.8).

In addition to examining individual-level attributes, we included measures that capture the context from which the enlisted soldier came, as well as characteristics of the soldier's most recent installation. Higher unemployment rates in a soldier's home state at accession are associated with lower likelihood of failing to adapt, according to this analysis. The differences are small albeit statistically significant (Figure 3.10). The first-term predicted attrition rates are estimated to range from around 29 percent from states with less than 5 percent unemployment to 27 percent for those states with higher levels of unemployment (8 percent or more) (Appendix B, Figure B.9). Although soldiers who underwent BCT at installations other than Fort Benning were less likely to fail to adapt, the differences between the other installations were small, with the exception of Fort Knox, where soldiers have 16 percent lower odds of attriting

Figure 3.9
Relationship Between Enlistment Bonus, Entry Pay Grade, and Career Management Field and First-Term Failure to Adapt (Odds Ratios)



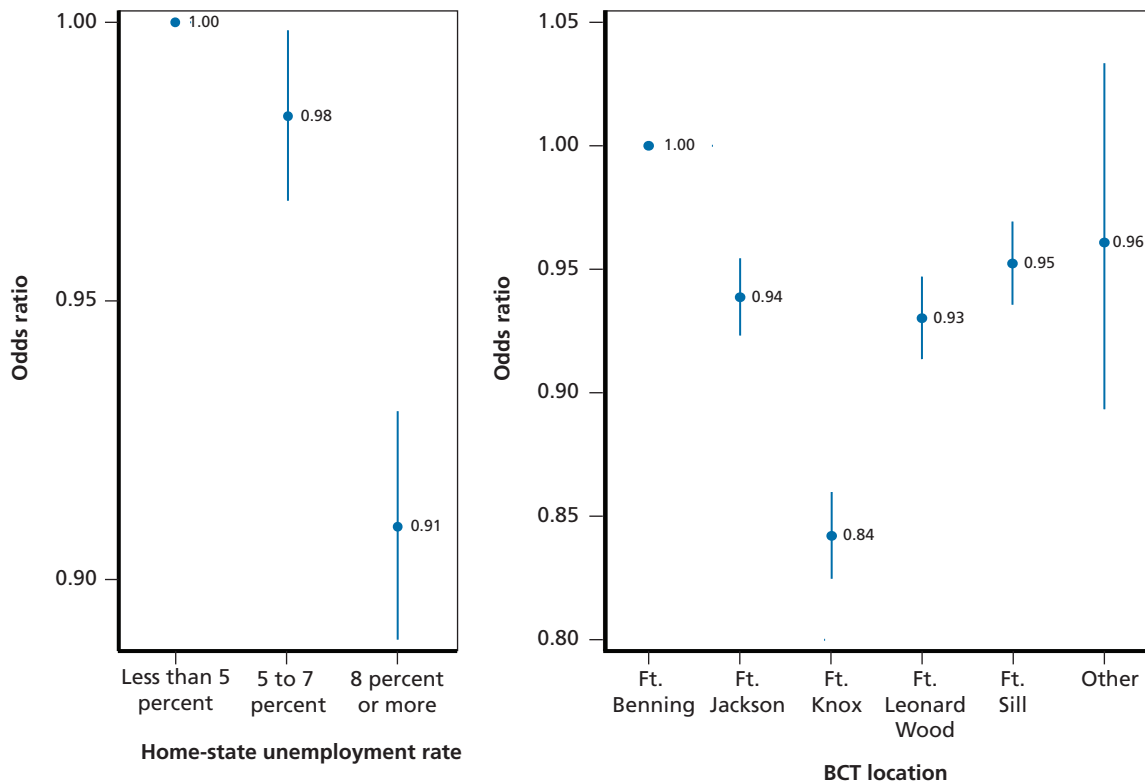
SOURCE: RAND Arroyo Center calculations from TAPDB-AE data.

NOTE: Vertical bars show 95 percent confidence intervals.

because of failure to adapt than soldiers who attended BCT at Fort Benning (Figure 3.10).⁶ Predicted first-term attrition rates ranged from 30 percent at Fort Benning to 26 percent at Fort Knox. The remaining installations had predicted attrition rates of around 28–29 percent (Appendix B, Figure B.9).

⁶ Although we do not investigate this directly in the descriptive analysis, a soldier's CMF influences basic-training location.

Figure 3.10
Relationship of Home-State Unemployment Rate and BCT Location with First-Term Failure to Adapt (Odds Ratios)



SOURCE: RAND Arroyo Center calculations from TAPDB-AE data.

NOTE: Vertical bars show 95 percent confidence intervals.

Summary of Descriptive Analysis

The descriptive analysis of the factors associated with soldier first-term attrition due to failure to adapt suggests that many of the associations that were found in previous work examining the factors that drive attrition still hold. Younger enlistees, women, and individuals with lower than a high school education and lower AFQT are associated with higher rates of failure to adapt. Characteristics of enlistment, such as receiving a bonus, coming in at a higher pay grade, and a medical MOS, are associated with lower rates of first-term attrition because of failure to adapt. We found that soldiers from states with higher unemployment rates have lower rates of attrition because of failure to adapt, although it is important to recognize that the measure of unemployment is at a very aggregate (state) level.

These findings highlight particular associations between observable characteristics of enlisted soldiers and failure to adapt. They do not imply a causal connection. In the next chapter, controlling for most of the variables just described, we utilize a subsample of our full data set and leverage a random-assignment mechanism to elucidate the causal link between a soldier's first assignment and that soldier's probability of failing to adapt.

The Effect of a Soldier's First Assigned Battalion on Attrition

In the previous chapter, we demonstrated using correlational analysis that individual characteristics are highly correlated with failure to adapt. Our literature review suggests that, in addition to those individual-level factors, unit leadership likely plays a role in explaining why some soldiers leave and others do not. This chapter uses a subset of our enlisted sample to examine the potential magnitude of the link between battalion leadership and failing to adapt. In particular, we calculate the amount of failure to adapt that is attributable to battalion-level factors—including but not limited to leadership—early in soldiers' first term.

As explained in more detail below, our analysis leveraged the random assignment of soldiers to their first battalion. We considered groups of soldiers who were assigned to the same battalion when it was under the same senior NCO and calculated the variation in first-term attrition or reenlistment across those groups of soldiers. Because the match pairs a soldier with a particular battalion–senior NCO combination, we refer to the battalion-leader pair throughout the text. The randomization lends a causal interpretation to our results, allowing us to attribute the measured effects to characteristics of the battalions or their leaders. For example, when comparing the top and bottom tails of the distribution of attrition rates across battalion-leader combinations, we can say how much of the difference is due to differences in the battalions or leaders themselves, as opposed to the characteristics of the junior enlisted soldiers who first arrive at that battalion under that leader or to the characteristics of the installation at which they are stationed.

The analysis yielded three major results. First, a soldier's first assignment can substantially affect his or her probability of failing to adapt. Regardless of the location to which a soldier is assigned, the particular combination of battalion and leader can alter the probability of failing to adapt by several percentage points (upward or downward). For example, when the battalion-leader pairs are ordered according to the measured causal effect on failure to adapt, a soldier first assigned to the 90th percentile pair would have a 7.8-percentage-point *lower* probability of failing to adapt than a soldier assigned to the 50th percentile—*after controlling for the average failure-to-adapt rate of all soldiers in the same MOS assigned to the same installation in the same year.*

Second, there is a systematic relationship between the battalion-leader effect on failure to adapt and the effect on reenlistment. We find that, on average, if a battalion-leader gets three soldiers to complete their first term who would have otherwise attrited because of failure to adapt, the battalion-leader also gets one soldier to reenlist who would not have reenlisted. The analysis does not necessarily conclude that one out of every three soldiers who fails to adapt would then go on to reenlist, but it does suggest that there is a correlation and that battalion-leader combinations that are generally good at preventing soldiers from attriting are also effec-

tive at increasing reenlistment. Identifying the factors that underpin the attributes of and dynamics within low-attrition, high-reenlistment battalions could prove valuable in replicating their effective qualities in other battalions across the service.

Finally, we tracked NCOs who led different battalions at different times and battalions that had different NCOs at different times, to differentiate the time-invariant effect of a leader from the time-invariant effect of a battalion. We find that the particular leader at the top of a battalion can explain some but not all of a battalion and leader's combined effect on first-term outcomes. This finding does not mean that leadership does not matter—rather, it implies that senior NCOs do not account for the full story. The qualitative evidence in the next chapter provides suggestive evidence as to what, exactly, does explain battalion-specific effects: different battalion “cultures” that instill Army values to different degrees, battalions' different experiences with deployment or different operational tempos, or battalions' different approaches to discipline or mentorship. Some of these mechanisms may operate well below the battalion level, such as at the level of a squad or a platoon; however, any mechanism that generates effects large enough to be observable in the quantitative battalion-level analysis must be operating systematically throughout a battalion.

The next section describes our empirical method. After that, we provide details on the matched junior enlisted–NCO sample and discuss the results of our random-assignment analysis. Notably, the measurements are based on the first battalion-leader assignment, but the final first-term outcomes may occur after the soldier has moved to another battalion or after the senior NCO has changed. In the last section, we discuss the implications of this and other aspects of our empirical setup.

Empirical Approach and Related Literature

Both the theory outlined by previous literature and the empirical patterns shown above suggest that failure to adapt is likely to result from a combination of “pull” factors (such as personal characteristics that put an individual soldier at risk of poor performance) and “push” factors (institutional characteristics that make it more difficult to perform one's duties). And, as hypothesized in Chapter One, Army unit leaders likely play a role in shaping some of the push factors and therefore have some effect on the pipeline of soldiers who fail to adapt.

We quantify the role of unit-level characteristics (including the unit's senior NCO) in determining failure to adapt, defining units at the level of battalion. We use the fact that junior enlisted soldiers are conditionally randomly assigned to their first permanent unit. Random assignment means that differences in outcomes later in soldiers' careers may be attributed to something about the battalion or senior NCO to which the soldiers were assigned.

In particular, junior enlisted soldiers are randomly assigned to their first battalion conditional on their MOS, the installation to which they are assigned, and the year of assignment. This is because the needs of the Army are prioritized over soldier preference, as outlined by Department of Defense Instruction 1315.18.¹ The instruction stipulates that “assignments will be made for all Service members without regard to their color, race, religious preference, ethnic background, national origin, age, marital status, sexual orientation, or gender, consistent with

¹ Department of Defense Instruction 1315.18, *Procedures for Military Personnel Assignments*, Washington, D.C.: U.S. Department of Defense, incorporating change 3, effective June 24, 2019.

requirements for physical capabilities.”² Insofar as individual preferences play a role in assignment to a particular installation, soldiers should still be randomly assigned to a particular unit at that installation.

The same random assignment mechanism was previously used by Carter and Skimmyhorn, who analyzed the effect of payday loans based on different loan policies across locations to which service members are randomly assigned.³ It was also used in a different context by Karaca-Mandic, Maestas, and Powell and by Lieber and Skimmyhorn to study peer effects at the company level.⁴ The former studied promotion rates, finding that time to promotion for women and most racial minorities was negatively affected by the presence of more female or like-minority peers but positively affected by having more female or like-minority leaders (although their definition of “leader” differed from ours).⁵ The latter studied financial decisionmaking, showing that peers’ decisions mattered for charitable giving.

Although none of these papers studied junior enlisted retention, other studies have used analogous random assignment of officers to analyze the effects of senior officers on junior officer retention and promotion. Lyle and Smith find that a captain’s assignment to a high-performing mentor increases the probability of early promotion to major by 29 percent, with the effect being larger when the duration of mentorship is longer.⁶ Carter and coauthors find that a high-quality leader increases a second lieutenant’s probability of fulfilling eight years of service by 2.1 to 2.7 percentage points, depending on whether the leader is the lieutenant’s senior or immediate boss.⁷

Our analysis builds off of these previous studies and, most closely, off of the prior RAND report by Wenger and coauthors discussed above.⁸ They developed the junior enlisted–senior enlisted matching algorithm used in the present report, but instead of focusing on a soldier’s first assignment, they consider a soldier’s most senior NCO at the time of attrition. They find that the relationship between attrition and senior NCOs’ experience is *U*-shaped: Attrition is lowest for soldiers whose senior NCOs have 22–25 years of experience and for those whose leaders have between 20 and 39 months of deployment. Because the authors do not condition on a soldier’s previous assignments, junior enlisted attrition cannot be attributed directly to the matched senior NCO. The report, however, provides the basis for our methodology, as well as a valuable comparison for the patterns we observe.

² Department of Defense Instruction 1315.18, 2019, § 3.a.

³ S. P. Carter and W. Skimmyhorn, “Much Ado About Nothing? New Evidence on the Effects of Payday Lending on Military Members,” *Review of Economics and Statistics*, Vol. 99, No. 4, 2017.

⁴ Pinar Karaca-Mandic, Nicole Maestas, and David Powell, *Peer Groups and Employment Outcomes: Evidence Based on Conditional Random Assignment in the U.S. Army*, working paper, University of Minnesota School of Public Health and RAND Corporation, 2013; E. M. J. Lieber and W. Skimmyhorn, “Peer Effects in Financial Decision-Making,” *Journal of Public Economics*, Vol. 163, 2018.

⁵ Karaca-Mandic, Maestas, and Powell (2013, p. 12) define each soldier’s “leaders” to mean all enlisted soldiers in the same company of higher rank. Thus, different junior enlisted soldiers in the same company might have different leaders.

⁶ D. S. Lyle and J. Z. Smith, “The Effect of High-Performing Mentors on Junior Officer Promotion in the US Army,” *Journal of Labor Economics*, Vol. 32, No. 2, 2014.

⁷ S. P. Carter, W. Dudley, D. S. Lyle, and J. Z. Smith, “Who’s the Boss? The Effect of Strong Leadership on Employee Turnover,” *Journal of Economic Behavior and Organization*, Vol. 159, March 2019.

⁸ Wenger et al., 2018.

Matching Junior Enlisted to Senior NCOs

We built on these prior studies by examining retention and reenlistment among junior enlisted soldiers, based on assignment to particular battalions with particular senior NCOs. We matched the junior enlisted soldiers to the senior NCO of their first battalion as of the day they began serving in that battalion, using the same strategy as in Wenger and coauthors.⁹ Using the data set described above, we used soldiers whose first assignment was to an MTOE unit. MTOE units are considered combat-ready and deployable, and the identification of senior enlisted leaders is most feasible for these units, since their UICs have a standardized format. The first four characters of the UIC indicate the battalion. The senior enlisted leader is the highest-ranking soldier in the battalion's headquarters company, with the company identified by the fifth character of the UIC.¹⁰ The subsample of junior enlisted soldiers who are matched to a senior enlisted NCO of a particular battalion is hereinafter called the *matched sample*.

Our matching algorithm associates a senior NCO with a specific battalion; thus, we are really capturing battalion-NCO pairs that are represented in a regression framework as dummy variables. The measured effects should be attributed to the battalion *while it was led by a particular NCO*. A benefit of this paired battalion-NCO approach is that we can try to disentangle the battalion-specific effect from the NCO-specific effect by comparing different battalions that were led by the same NCO, as well as different NCOs who led the same battalion (see Appendix D). But because the dummies indicate battalion-NCO combinations, they do not indicate what aspects of the NCO or battalion individually are driving the results.

The lack of a clear mechanism behind the results is due to the battalion-NCO dummies standing in for a large amount of unobserved information. Even if we could attribute the effects to the battalion and not the NCO, we would not know what about the battalion determines the failure-to-adapt effect. "Looking under the hood," so to speak, requires information unavailable in the administrative personnel data that were used for this analysis. A good starting point would be to systematically collect qualitative information about different battalions. The qualitative interviews described in the next chapter illustrate the potential for such research serving as a complement to the quantitative analyses here. The conclusion highlights further ways in which qualitative work could leverage the quantitative results discussed below.

To identify battalion-NCO effects on failure to adapt while controlling for a variety of individual junior enlisted characteristics, we needed sufficiently large numbers of junior enlisted soldiers in each matched battalion-NCO pair. We opted to analyze battalion-NCO pairs with more than 100 matched junior enlisted soldiers. In addition, because we are interested in within-installation effects, we had to limit the sample to installations with at least two battalions in a given year. Seventy-one percent of all matched soldiers are first assigned to such a battalion-NCO pair, so we are capturing the majority of the potential sample while ensuring that the effects are identified. On average, a soldier is assigned to a battalion and NCO with 286 other matched soldiers, who may be assigned in different years. And, on average, a soldier

⁹ Wenger et al., 2018.

¹⁰ There are two reasons why it is not feasible to match at a lower level than a battalion. First, the most senior enlisted soldier is uniquely identifiable at the battalion level but not at a level below that. Second, we cannot be sure that assignment to units smaller than a battalion is conditionally random, using information observable to us as researchers. It could, for example, be conditional on something observed by senior leaders at the installations that is not recorded in the data.

is in an MOS-year-installation cohort with 270 other matched soldiers, who may be assigned to different battalions.¹¹

There are 165,032 junior enlisted soldiers in the matched sample. Table A.1 in Appendix A shows the characteristics of this matched sample (columns 3 and 4). Matched soldiers were assigned to their first unit after an average of 7.4 months of active duty service. Four percent of the matched soldiers were female, and they averaged 21.6 years old at the time of the match. Finally, the matched sample has a 16.8 percent rate of failure to adapt, a 40.2 percent rate of reenlistment, and a 6.9 percent rate of separation due to disability, MIA, or KIA.¹²

When comparing these results with the full sample (columns 1 and 2 of Table A.1), it must be remembered that soldiers in the matched sample all reached their first permanent assignment, so they all served past the six-month mark. This explains some apparent differences between the two samples. For instance, between accession and first assignment, some soldiers got married, and the average number of dependents increased. Also, many soldiers who entered as E1 were promoted to E2 by the time of first assignment.

Our matched sample has a slightly lower than average rate of failing to adapt, at 16.8 percent, compared with 19.8 percent for all soldiers in the full sample who served at least six months. The different rates may be due to different compositions of MOSs between soldiers in the matched sample versus the full sample. Different MOSs have different attrition and reenlistment rates because of a variety of factors, including different job-related stress and different reenlistment incentives. The matched sample consists only of soldiers in MTOE units, who are much more likely to be in a combat CMF than any other field. Other compositional differences in individual characteristics may partly explain differences in outcomes, as well. Soldiers in the matched sample are more likely to be White, to have a three- or four-year contract (as opposed to five or six years), to be in AFQT Category II or IIIA, and to have received an enlistment bonus. They are less likely to have a college degree or be female. All of these characteristics are associated with attrition, as noted in the preceding chapter.

Limiting the sample to MTOE units enabled us to perform the junior-senior match, but we do not believe that conditioning on this sample was of great detriment to our analysis. First, MTOE units are deployable and combat-ready, meaning that they are of interest in terms of readiness. Further, nondeployable units (Table of Distribution and Allowances [TDA] units) might have fewer junior enlisted soldiers relative to seniors, meaning that they are less likely to be of interest to this study.¹³ Finally, although our matched sample had a slightly lower than average rate of failing to adapt, it was still common enough that it is worthwhile studying this sample.

Our analytic sample consists of 757 battalion-NCO pairs, with 718 unique NCOs and 298 unique battalions. This means that many battalions had different senior NCOs over the time frame we study; also, a handful of senior NCOs led more than one battalion at differ-

¹¹ In our analytic sample, there are 8,194 MOS-year-installation cohorts. For a given cohort, the average rate of failure to adapt is 16.6 percent, reenlistment is 43.9 percent, and separation because of disability, MIA, or KIA is 6.1 percent. Appendix C provides additional evidence that these chain-of-command assignments are conditionally random.

¹² This category is dominated by separation because of disability: 6.3 percent, versus 0.6 percent MIA or KIA. We grouped these outcomes together because MIA and KIA separations are too few to be analyzed as their own category.

¹³ Wenger et al., 2018, p. 9.

ent points.¹⁴ See Table D.1 in Appendix D for characteristics for the battalion-NCO pairs, which we summarize here.¹⁵ On average, we matched 227 junior enlisted soldiers from our full sample to each battalion-NCO pair. The junior enlisted soldiers matched to a given battalion-NCO pair had an average failure-to-adapt rate of 17 percent, but this varied from 4.4 percent to 35.1 percent, a range of more than 30 percentage points. Reenlistment has an even bigger range, from 19.2 percent to 67.2 percent, with an average of 40.3 percent. Separation due to disability, MIA, or KIA ranged from 0 percent to 20.4 percent, with an average of 6.7 percent. After accounting for separations and moves to other battalions (either because the junior enlisted soldier moved or the senior NCO moved), junior enlisted soldiers spent an average of 11.1 months under a given battalion-NCO pair. This average differs by eventual first-term outcome; for those who eventually failed to adapt, the average time spent is just under nine months, whereas for those who reenlisted, the average is just under 12 months. The tenure of those who became disabled, MIA, or KIA is in between those who failed to adapt and those who reenlisted, at 10.4 months. These patterns imply that those who fail to adapt often separate during their first assignment, rather than later.¹⁶

Analytic Strategy

This section describes the conceptual analytic strategy used to identify the effects of battalion-NCO pairs; Appendix C provides more details. We identified the effect of each battalion-NCO pair on failure to adapt using a linear regression of all matched junior enlisted soldiers. The outcome variable is binary, with one indicating failure to adapt prior to the end of the first term. The regression includes an indicator variable for the soldier's first assigned battalion-senior NCO combination, as well as indicators for MOS-year of enlistment-installation combinations. The last two variables control for the random assignment to different units. We also included the personal characteristics listed in Table A.1. These account for observable information available to the Army at the time of assignment and increased precision of the estimates.

Our regression strategy identified the fixed effect of a combined battalion and NCO on failure to adapt. The fixed-effect approach was used in a separate setting by Lacetera and coauthors.¹⁷ We adopted their strategy of transforming the regression variables to produce an intuitive interpretation of the results. Because a regression with indicator variables must exclude an arbitrary indicator, we interpreted the coefficients as the effect above or below that excluded category. We transformed the coefficients by subtracting the average coefficient across all battalion-NCO pairs. The resulting interpretation is the effect of a battalion-NCO

¹⁴ In our sample individual battalions are observed to have between one and eight different senior NCOs, with 37 percent having just one. Individual NCOs lead between one and three different battalions, with 95 percent leading just one.

¹⁵ Characteristics of individual NCOs are measured at the time a junior enlisted soldier joined the relevant battalion. To summarize these characteristics, which are also tabulated in Table D.1: NCOs had an average of 25 years of service and were almost all E9s (98 percent—they are most probably command sergeant majors or first sergeants). They had spent an average of 36 months in their current pay grade. They took an average of 89 months (or just under 7.5 years) to reach E6, corresponding to the 14th percentile for promotion time to E6 (compared with others with the same enlistment year and CMF; note that lower percentiles mean faster promotion times).

¹⁶ Time spent in the first battalion cannot be used in the regressions because it is correlated with the outcome being studied. Introducing it in the regressions would introduce endogeneity that would eliminate the causal interpretation of the regressions.

¹⁷ Nicola Lacetera, Bradley J. Larsen, Deven G. Pope, and Justin R. Sydnor, "Bid Takers or Market Makers? The Effect of Auctioneers on Auction Outcome," *American Economic Journal: Microeconomics*, Vol. 8, No. 4, 2016.

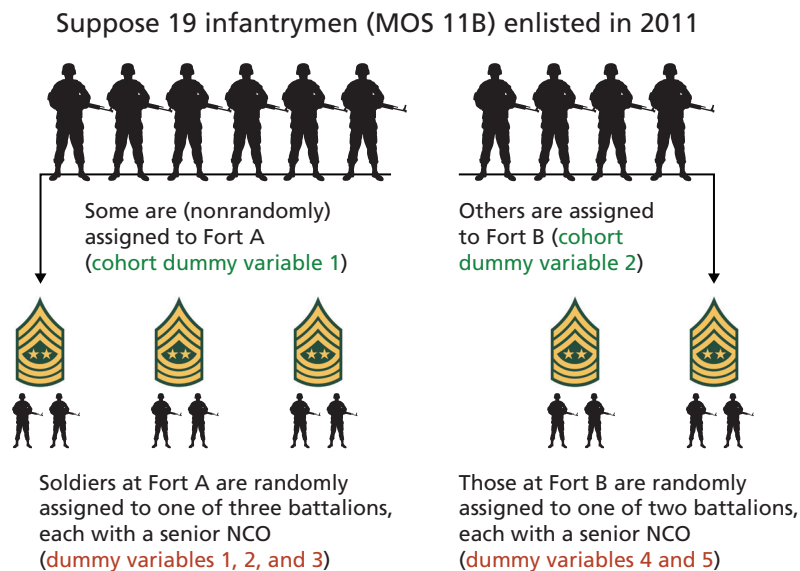
pair on the rate of failure to adapt, above or below the effect of the average. Battalion-NCO pairs with positive coefficients induce higher-than-average rates of failure to adapt, while those with negative coefficients induce lower-than-average rates of failure to adapt.

Conceptual Example

Before displaying the results, a conceptual example may assist in illustrating the identification strategy and the proper interpretation of the regression coefficients. Figures 4.1 and 4.2 illustrate the setup, focusing on soldiers from just one MOS who enlisted in the same year. For concreteness, Figure 4.1 labels them as infantrymen (MOS 11B) who enlisted in fiscal year 2011. The figure shows the two steps in the assignment process. First, soldiers are split (nonrandomly) between Fort A or Fort B. This creates two cohorts, each of which would be represented by a dummy variable in the regression: infantrymen at Fort A, who enlisted in 2011, and infantrymen at Fort B, who enlisted in 2011. At each fort, soldiers are then randomly split into battalions, which constitute the units of analysis.¹⁸

Once the soldiers are assigned to their units, we will observe a certain number of them fail to adapt. Figure 4.2 shows how this occurs across the battalions in the conceptual example. Overall, 40 percent of the soldiers fail to adapt (the gray shaded silhouettes), but they are distributed unevenly across battalions: At Fort A (the first cohort), Battalion 1 has zero soldiers fail to adapt, Battalion 2 has 50 percent, and Battalion 3 has 100 percent, for a cohort-

Figure 4.1
Conceptual Example of Random Assignment and Regression Setup



NOTE: The figure illustrates a conceptual example of the two-stage assignment process to show how soldiers are distributed to their first permanent battalion.

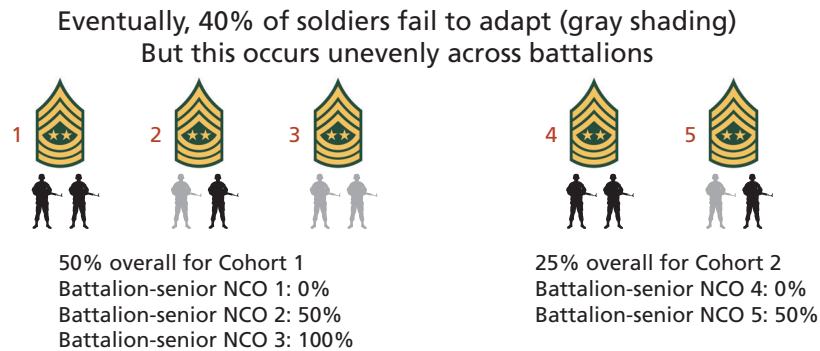
¹⁸ Each battalion has its own senior NCO, but in this illustration the senior NCOs are omitted. If we had illustrated multiple years of incoming soldiers, then we would be able to differentiate battalion-NCO pairs by showing a single battalion with different senior NCOs in different years.

level rate of 50 percent. At Fort B (cohort 2), Battalion 4 has 0 percent, while Battalion 5 has 50 percent, for a cohort-level rate of 25 percent.

The key point is that the measured battalion effects are *relative to the rest of the cohort*. Because the regression controls for cohort-level attrition by including cohort dummies, the battalions are only being compared with *other battalions at the same installation in the same year*. To see this in the example, consider the table at the bottom of Figure 4.2. The effect size for battalion 2 is zero. This is because soldiers in that battalion have an average rate of failure to adapt, compared with the rest of their cohort—even though their rate is higher than the population as a whole.¹⁹

As Figure 4.2 emphasizes, controlling for cohorts is important for distinguishing the role of an installation from the role of its constituent battalions and NCOs. In this example, Fort A has a higher baseline rate of failure to adapt, perhaps because of its climate, its amenities, its operational tempo, or some other characteristic that distinguishes it from Fort B. The

Figure 4.2
Conceptual Example of Failure-to-Adapt Outcomes and Regression Coefficients



Unit of observation	Failure to adapt outcome	Regression result
Cohort 1	Above average <i>for population</i>	Cohort dummy #1 > 0
Cohort 2	Below average <i>for population</i>	Cohort dummy #2 < 0
Battalion/senior NCO 1	Below average <i>for cohort</i>	Battalion/NCO dummy variable 1 < 0
Battalion/senior NCO 2	Average <i>for cohort</i>	Battalion/NCO dummy variable 2 = 0
Battalion/senior NCO 3	Above average <i>for cohort</i>	Battalion/NCO dummy variable 3 > 0
Battalion/senior NCO 4	Below average <i>for cohort</i>	Battalion/NCO dummy variable 4 < 0
Battalion/senior NCO 5	Above average <i>for cohort</i>	Battalion/NCO dummy variable 5 > 0

NOTES: The figure illustrates a conceptual example of how the analysis identifies battalion-NCO-specific effects on failure to adapt. In a regression setting, one cohort dummy and one battalion-NCO dummy would be omitted. The conceptual illustration indicates the sign (positive or negative) of the measured effects of cohorts and battalions, after normalizing relative to the omitted categories, as described in the text.

¹⁹ Similar approaches have been used in the education literature. For example, Chetty and coauthors looked at random assignment to classrooms based on school and year to see the effect of a small classroom. Their school-year dummies are analogous to the cohort dummies here, and some of their outcome variables are analogous to the NCO characteristics we examine in Appendix D. See Raj Chetty, John N. Friedman, Nathaniel Hilger, Emmanuel Saez, Diane Whitmore Schanzenbach, and Danny Yagan, “How Does Your Kindergarten Classroom Affect Your Earnings? Evidence from Project STAR,” *Quarterly Journal of Economics*, Vol. 126, No. 4, 2011.

regression coefficient of zero for Battalion 2 recognizes that this battalion is average, *given the conditions in which it is operating*, despite the fact that, compared with the general population, it appears to be worse than average.

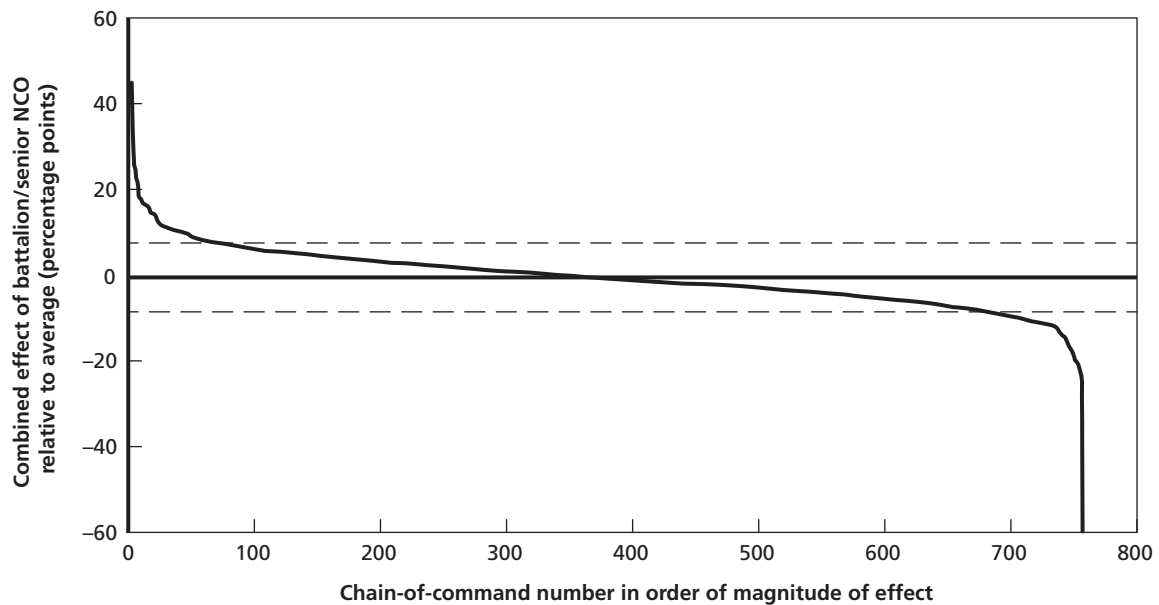
Results

Failure to Adapt

To visualize the regression coefficients for the battalion-NCO dummy variables, we ordered the normalized coefficients from the most-adverse measured effect to least adverse. This allows us to show the range of effect sizes, since the actual numbering of the battalions and NCOs is arbitrary and irrelevant. In this section, we present results using the full set of dummy variables and individual-level covariates; see Appendix C for evidence that the exclusion of such covariates does not change the results.

Figure 4.3 shows the battalion-NCO-level effects on failure to adapt, in order from largest positive magnitude (biggest increase in failure to adapt) to largest negative magnitude (biggest decrease in failure to adapt). The effects follow a roughly linear pattern, except in the tails.²⁰ The horizontal axis numbers battalion-NCO pairs in order of magnitude of their effect. For example, the battalion-NCO pair numbered 100 means that 99 battalion-NCO pairs have more-adverse effects on failure to adapt, while 657 have less-adverse effects on failure to adapt.

Figure 4.3
Normalized Battalion–Senior NCO Effects on Failure to Adapt



SOURCE: RAND Arroyo Center calculations from TAPDB-AE data ($N = 757$).

NOTES: Dashed lines show the 10th and 90th percentiles. 10th percentile = +8.1; 90th percentile = -7.9.

²⁰ The nonlinearity in the tails is due to the use of a linear regression, which does not fit the tails of the distribution very well. For this reason, we limited ourselves to examining chains of command between the 10th and 90th percentiles. See Appendix C for further discussion.

The effects should be interpreted as the percentage point increase or decrease in failure to adapt that is attributable to a particular battalion-NCO pair, above and beyond the average. The statistical significance of the effect sizes is not shown, but 18 percent of the battalion-NCO pairs had effects that were significantly different from average.²¹ The R-squared for the regression is 9.8 percent.²²

To provide a benchmark for understanding the magnitudes of the effects, the dashed lines in Figure 4.3 mark the effect sizes for the battalion-NCO pairs at the 10th and 90th percentiles. The difference between these percentiles is 16 percentage points. The interpretation is that two random junior enlisted soldiers first assigned to the battalion-NCO pairs at those respective percentiles would have a 16 percentage point difference in the probability of failing to adapt, after adjusting for their MOS, year of accession, and installation. Another way to think about the results is in terms of the standard deviation, which is 7.8. The interpretation is that increasing a battalion-NCO's position in the distribution by one standard deviation would decrease failure to adapt by 7.8 percentage points.

It is also useful to compare within installations, to determine whether variation is greater within an installation or across different installations. First, Figure 4.4 shows the differences in average failure-to-adapt rates across the 11 installations with the most battalion-NCO observations. There is an 8-percentage-point range across installations, from 13 percent at Fort Benning to 21.1 percent at Fort Bliss.

Figure 4.5 shows a boxplot of the battalion-NCO effects within each of these 11 installations. The boxplots show the distribution of battalion-NCO pairs relative to the average effect for that installation (i.e., the average for each installation is normalized to zero). The figure shows two important patterns. First, after controlling for installation-level attrition, the variation attributable to battalion-NCO characteristics is larger within an installation than across installations. This means that the variation in battalion-NCO outcomes is similar regardless of whether an installation has overall high or low rates of failure to adapt. As an example, compare Fort Benning with Fort Bliss, which have, respectively, the lowest and highest overall rates of failure to adapt in Figure 4.4. Even though those baseline rates are quite different, the boxes and tails in Figure 4.5 show that the battalion-NCO pairs within each installation will induce a similar amount of variation around the respective baseline.

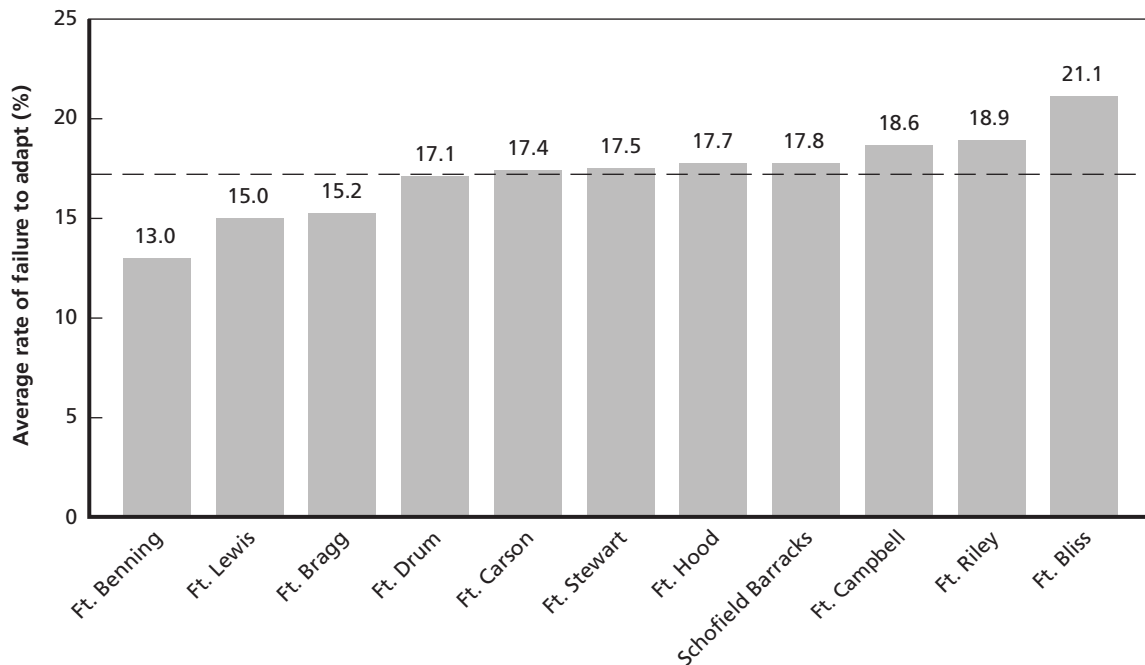
The second point is a caveat to the first: Installations with above-average rates of failure to adapt do have some outlier battalion-NCO pairs with especially high effects. This means that even conditional on the location and the types of soldiers assigned to the battalion, those battalion-NCO combinations have unusually high rates of failure to adapt.

The overall message of Figures 4.4 and 4.5 is that, in addition to variation in attrition rates across installations, there is also a great deal of variation *within* installations. No matter if a soldier is assigned to a fort with an overall high or low rate of failure to adapt, the particular battalion and senior NCO can still affect the soldier's individual probability by several per-

²¹ Standard errors were clustered within cohort-battalion-NCO groups, which accounts for shocks that are specific to soldiers in a particular MOS and battalion and year. This is a conservative approach; when we clustered instead at the installation-year level, we found that 30 percent of the chains of command had statistically significant effects.

²² To further assess model fit, including the effect of running a linear regression on a binary outcome, we calculated the predicted probability of failing to adapt based on the regression coefficients. Ninety-four percent of the predicted probabilities are between 0 and 1. The predicted probabilities are heavily clustered around the mean of 0.168, with over half of them between 0.10 and 0.25.

Figure 4.4
Average Rate of Failure to Adapt in Matched Sample, by Installation



SOURCE: RAND Arroyo Center calculations from TAPDB-AE data.
NOTE: The dotted line marks the overall average of 17.2 percent.

centage points. On a basis of around 20 percent, this can be a large change in the probability of completing the first term.

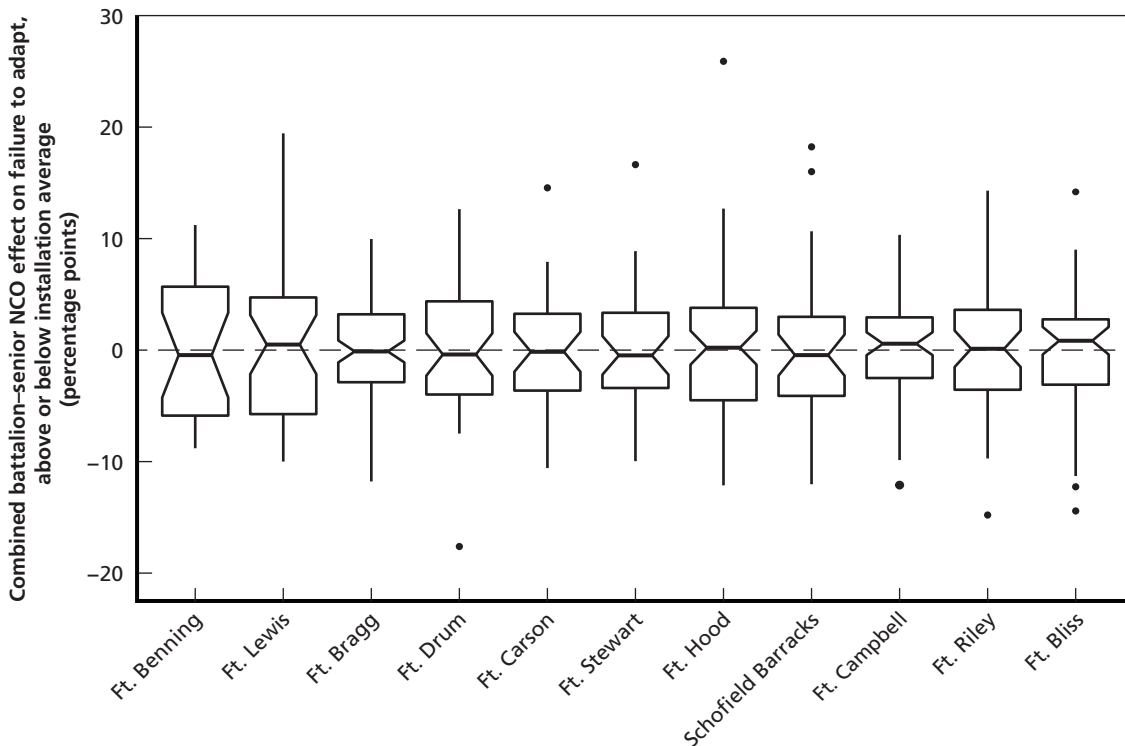
Within-installation variation in attrition is of interest partly because it shows that there is the potential to identify the characteristics of low-attrition battalions and NCOs and replicate those characteristics in other battalions and with senior NCOs at the same installation. This could be valuable insofar as battalion-level and senior-NCO-level characteristics can be altered more easily within a given installation than installation-level characteristics can be altered across all locations.

Reenlistment

Failure to adapt is just one possible outcome of interest; reenlistment is another such outcome. Just as failure to adapt may be a complex phenomenon resulting from the interaction of push and pull factors, reenlistment may also result from a combination of factors. Battalions and their senior NCOs may influence soldiers' decisions to continue after their first term of service versus leave. Accordingly, we ran a regression analogous to that for failure to adapt, using reenlistment as the outcome variable.

Figure 4.6 shows the results for reenlistment. Here, the battalion-NCO pairs are ordered from the largest negative-magnitude effect (most adverse effect on reenlistment) to the largest positive-magnitude (least adverse effect on reenlistment), with 14 percent of the 757 battalion-NCO pairs having a statistically significant effect compared to the average. The difference between the 10th- and the 90th-percentile battalion-NCO pair is 19.7 percentage points. In

Figure 4.5
Normalized Battalion–Senior NCO Effects on Failure to Adapt, by Installation



SOURCE: RAND Arroyo Center calculations from TAPDB-AE data ($N = 567$ battalion-NCO combinations).

NOTES: Installations are ordered by average rate of failure to adapt, as in Figure 4.4. Boxplots show the median (horizontal lines), interquartile range, and minimum and maximum effects on failure to adapt for combinations of battalions/senior NCOs at each installation. Statistical outliers are shown by individual dots. The notch in each box shows a one-standard-deviation interval around the median. The horizontal dotted line marks zero, to which the average within each installation is normalized.

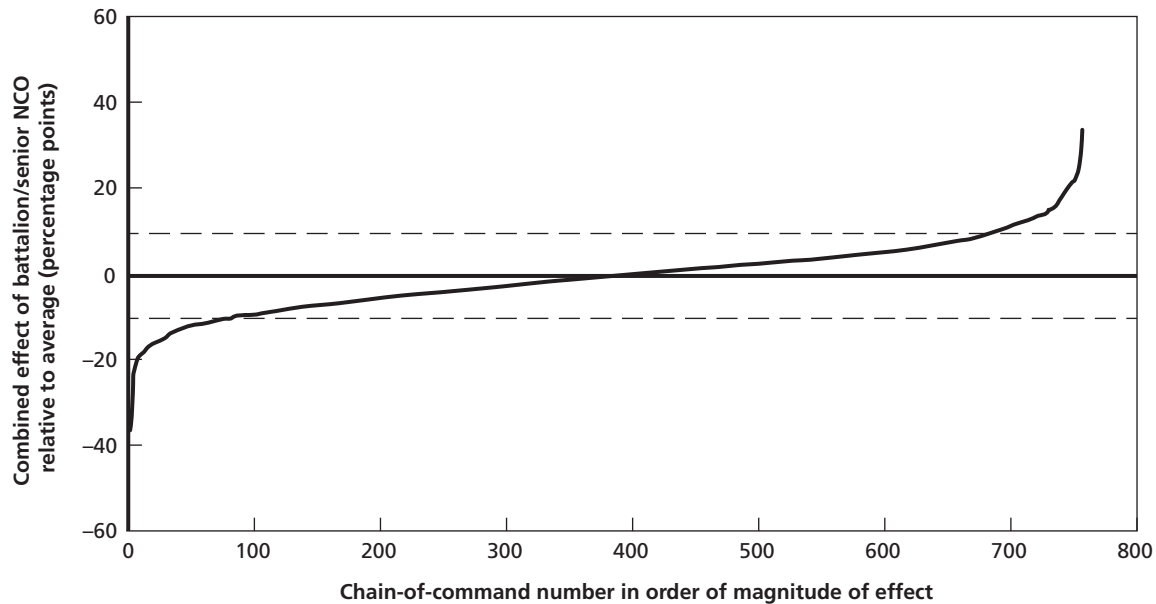
terms of standard deviations, moving up the distribution by one standard deviation would result in an 8.3-percentage-point increase in reenlistment.

Correlation Between Failure to Adapt and Reenlistment

The potential link between reenlistment and failure to adapt is of interest because battalion-NCO pairs with positive effects on failure to adapt (i.e., low rates of attrition) may be “converting” otherwise at-risk soldiers into reenlisters. This points to large potential benefits for “saving” soldiers from failing to adapt: It is much more worthwhile to reduce failures to adapt if those who otherwise separate will go on to reenlist rather than leaving at the end of their first term.

In some sense, there is an automatic connection between the two outcomes: a lower-than-average rate of failure to adapt means that a greater-than-average fraction of soldiers is potentially eligible for reenlistment. Yet the presence of a strong causal link is not so obvious. For one, a higher rate of reenlistment eligibility does not necessarily translate to a higher rate of actual reenlistment. Further, the two outcomes occur at different times. Soldiers who fail to adapt may separate while assigned to their first unit, whereas reenlistment likely occurs later.

Figure 4.6
Normalized Battalion–Senior NCO Effects on Reenlistment



SOURCE: RAND Arroyo Center calculations from TAPDB-AE data ($N = 757$).

NOTES: Dashed lines show the 10th and 90th percentiles. 10th percentile = -9.9 ; 90th percentile = $+9.8$.

Therefore, a soldier's first battalion and NCO might have more of a causal impact on separation than on reenlistment.

The connection, if any exists, is not obvious from Figures 4.3 and 4.6, since each battalion-NCO pair might have a different position in the ranking for each effect. As an example, the battalion-NCO with the 104th-largest effect on failure to adapt might be different from the battalion-NCO with the 104th-largest effect on reenlistment. To shed light on the actual correlation between outcomes, Figure 4.7 shows each battalion-NCO pair's measured effect on failure to adapt against its effect on reenlistment. The dashed line shows the linear trend, indicating the correlation between the two measures. The slope of the line is -0.27 , meaning that a 4-percentage-point reduction in the rate of failure to adapt is associated with just over 1-percentage-point increase in the rate of reenlistment.²³

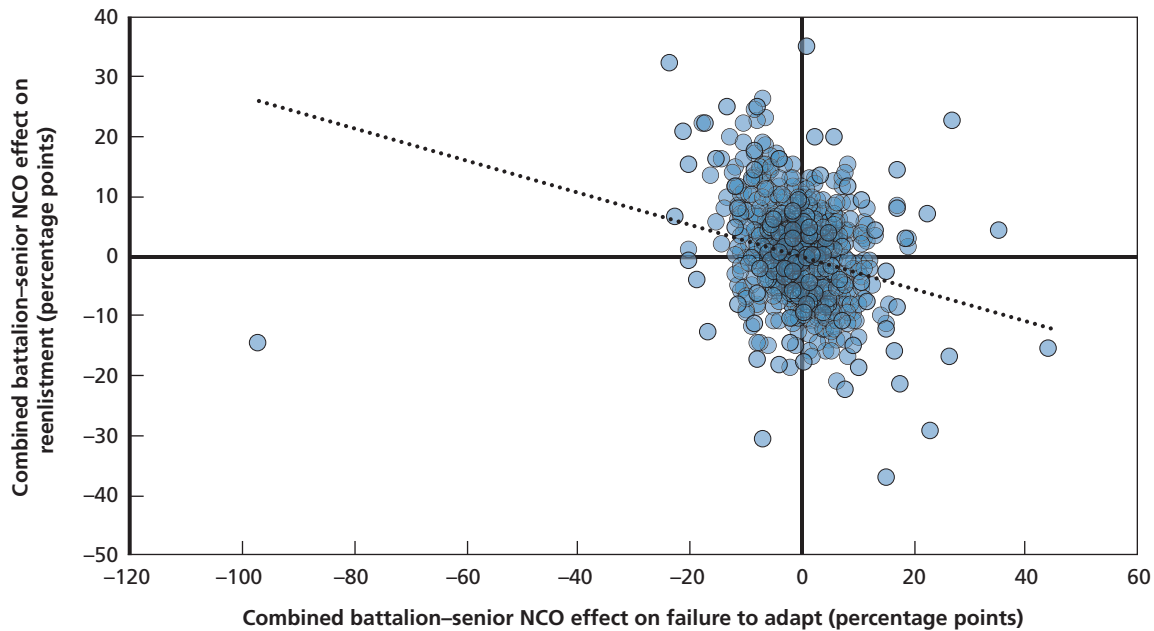
The correlation between battalion-NCO effects on failure to adapt versus reenlistment suggests that a possible causal connection between failure to adapt and reenlistment would be an average conversion rate of approximately one in three. In other words, if a particular battalion-NCO gets three soldiers to complete their first term who would otherwise have failed to adapt, they also get one successful completer to actually go on to reenlist.

Distinguishing Senior NCO from Battalion Characteristics

The results of the random assignment analysis indicate that a soldier's first battalion and senior NCO does influence first-term outcomes, above and beyond individual- and installation-level factors. Further, the differences between battalion-NCO pairs are large relative to the base-

²³ After removing the outlier near -100 on the horizontal axis, the slope increases to -0.37 , implying an even stronger relationship between failure to adapt and reenlistment.

Figure 4.7
Battalion-NCO Effects on Reenlistment Versus Failure to Adapt



SOURCE: RAND Arroyo Center calculations from TAPDB-AE data.

NOTES: Each dot represents a battalion/senior NCO combination ($N=757$). Dashed line shows the linear trend; slope = -0.27 .

line rate of failing to adapt. Insofar as battalions and NCOs with adverse effects on first-term outcomes could potentially adopt characteristics of those at the same installation with positive effects, their rate of failure to adapt could be lowered. However, this raises the question: What distinguishes battalion-senior NCO combinations with negative versus positive effects? It is impossible to answer this question conclusively, but this section describes some additional analysis that distinguish the effect of the individual senior NCO from the effect of the battalion that NCO leads. Those characteristics underlying each effect, however, are in turn unclear. For example, the important characteristics of a battalion may be its unique culture, a particular operational tempo that differs from other battalions at the same installation, a deployment, or some characteristics of the officers who lead the battalion.

The Effect of Senior NCO Characteristics

Prior work highlights the particular leadership qualities possessed by effective NCOs. For example, Wenger and coauthors showed that first-term attrition rates are associated with a senior NCO's time in service and deployment experience, among other factors.²⁴

To test whether random assignment to a high-quality NCO could explain whether a soldier failed to adapt, we regressed failure to adapt outcomes on senior NCO characteristics, as well as on junior enlisted characteristics and the cohort dummies used above. We chose NCO characteristics identified by Wenger and coauthors as being related to leadership quality. These include years of service (less than 22 years, 22–25 years, and more than 25 years), time in grade

²⁴ Wenger et al., 2018.

(more or less than 24 months), AFQT category, pay grade, and education level.²⁵ The results are shown in Table 4.1.

The table shows the coefficients on NCO characteristics for the same sample that was used in the main analysis. Most of the coefficients are close to zero and are generally not significant. Therefore, conditional on the random assignment cohorts, NCO characteristics do not much matter. The exception is an NCO in pay grade E9; compared with E8s, E9s lower the failure to adapt rate by 3.6 percentage points. The general lack of statistical significance is at odds with the findings of Wenger and coauthors. There could be multiple explanations for this difference. For one, we measured characteristics of the enlisted soldier's first NCO, while the other report tracked different NCOs over a soldier's first term. We also controlled for random assignment, which Wenger and coauthors could not do because they did not condition on a soldier's first assigned battalion.²⁶

However, the last two columns of Table 4.1 show that the differences in statistical significance disappear if we stop controlling for the random-assignment cohorts.²⁷ The columns show that dropping the indicators for random-assignment groups changes the inference regarding NCO characteristics. Three measures of model fit are provided: the Hosmer Lemeshow test indicates that the logit models are well calibrated, although the Akaike information criterion and the R-squared values indicate that the logit models have inferior fits, compared with the coefficients column. Statistically speaking, these are not the correct models from which to deduce causal effects, because they do not control for the random assignment of soldiers to battalions. But the comparison shows that cohort-specific effects explain much of what would otherwise *appear* to be related to NCO characteristics.

The table also presents excluded cohort controls (but still included year and installation dummies). The results show that NCOs' years of service and time in grade are correlated with the failure to adapt rate, in addition to pay grade as before. Having an NCO with less than 22 years of service is associated with a 0.9-percentage-point lower probability of failing to adapt (compared with an NCO with 22 to 25 years of experience). Having an NCO with less than two years' experience in a pay grade is associated with a 0.5-percentage-point higher probability (compared with having an NCO with more than two years in grade). If we exclude all year and installation controls (the last column), these associations are all amplified, and the NCO's AFQT score and education are additionally significant. AFQT categories I and IIIA and having more than a high school education also become significantly associated with the probability of failing to adapt (compared with AFQT Category IIIB or having a high school diploma or GED).²⁸

²⁵ We did not have all of the variables used in Wenger et al., 2018. We lacked deployment experience and had too few measures of a senior NCO's percentile of promotion time to E6. For comparison of variables, see Table A.3 in their report.

²⁶ Wenger et al., 2018.

²⁷ Because of the reduced numbers of binary variables, we were able to run logit models and report marginal effects. There are virtually no differences between the marginal effects reported here and the coefficients if we had instead run a linear probability model (LPM).

²⁸ It is difficult to compare our marginal effects to Wenger et al., 2018, because the authors reported the regression coefficients instead of marginal effects, and they analyzed 48-month failure to adapt, which is slightly different from our outcome; see their Table A.4. For this reason, we confine the comparison to the discussion of statistical significance.

Table 4.1
Effects of Senior NCO Characteristics on Junior Enlisted Probability of Failure to Adapt

NCO Characteristic	LPM Coefficient (cohort dummies)	Logit (marginal effects, year and installation dummies)	Logit (marginal effects, no dummies)
Years of service < 22	-0.004 (0.004)	-0.009** (0.004)	-0.010*** (0.004)
Years of service > 25	-0.002 (0.003)	3.08 e-4 (0.003)	0.002 (0.003)
AFQT category I	0.007 (0.006)	0.009 (0.006)	0.014** (0.006)
AFQT category II	-0.001 (0.003)	-0.001 (0.003)	0.002 (0.003)
AFQT category IIIA	0.003 (0.003)	0.003 (0.003)	0.008** (0.004)
AFQT category IV	-0.002 (0.005)	-0.002 (0.004)	-0.003 (0.004)
Pay grade E9	-0.036*** (0.011)	-0.033*** (0.009)	-0.049*** (0.011)
Time in grade: less than 2 years	2.71 e-4 (0.003)	0.005* (0.003)	0.003 (0.003)
Less than high school or GED	-1.33 e-4 (0.111)	0.001 (0.003)	0.030 (0.087)
More than high school or GED	0.004 (0.003)	0.001 (0.079)	0.010*** (0.003)
<i>N</i>	165,032	165,029	165,029
R2 or pseudo-R2	0.091	0.040	0.034
Hosmer and Lemeshow <i>p</i> -value	—	0.150	0.301
Akaike information criterion	127,620	143,492	144,278

SOURCE: RAND Arroyo Center calculations from TAPDB-AE data.

NOTES: Standard errors are in parentheses, clustered by MOS-year-installation-battalion-NCO groups. The sample is the same as that used in the main analysis. The coefficient column includes indicators for MOS-year-installation cohorts. The last two columns exclude indicators for MOS-year-installation cohorts and report marginal effects from logit regressions. The first logit column includes indicators for years and for installations, while the last column does not include any controls for MOS, year, or installation. All regressions additionally include junior enlisted characteristics listed in Table A.1. The Hosmer and Lemeshow test was run on deciles of the data. A *p*-value larger than 0.05 indicates that we cannot reject the null hypothesis that the model is well calibrated (that is, the predicted values match the observed values well). The Akaike information criterion is a measure of model fit; smaller numbers indicate better fit.

The Effect of Time-Varying Characteristics of a Battalion

The overall takeaway from Table 4.1 is that a soldier's cohort matters. Once we control for the cohort in which soldiers are randomly assigned to their first battalion, the observable characteristics of the NCO at the head of that battalion do not matter very much. But the measured effect of a senior NCO may be attributable to more than just observable characteristics of the NCO: It may be capturing any time-varying aspect of a battalion that is correlated with changes in the senior NCO leadership. There are two such time-varying factors that could be unobservable but captured by NCO-specific effects. First, unobservable characteristics of the NCOs themselves could matter. For instance, senior NCOs may differ in how they manage junior NCOs and indirectly affect how those junior NCOs mentor junior enlisted soldiers. Second, changes in senior NCO leadership could be correlated with other changes in a battalion, such as the beginning or end of a deployment. If some aspect of a battalion is strongly correlated with the time during which the battalion was led by a particular senior NCO, its effect on failure to adapt could be captured by the NCO-specific effect.²⁹

Appendix D provides an in-depth technical analysis of the importance of unobserved NCO characteristics. The results show that the tenure of a particular senior NCO is correlated with some differences in battalion-specific effects, but these time-varying effects do not fully explain the observed differences highlighted in Figures 4.3 and 4.6. We provide an illustrative example here.

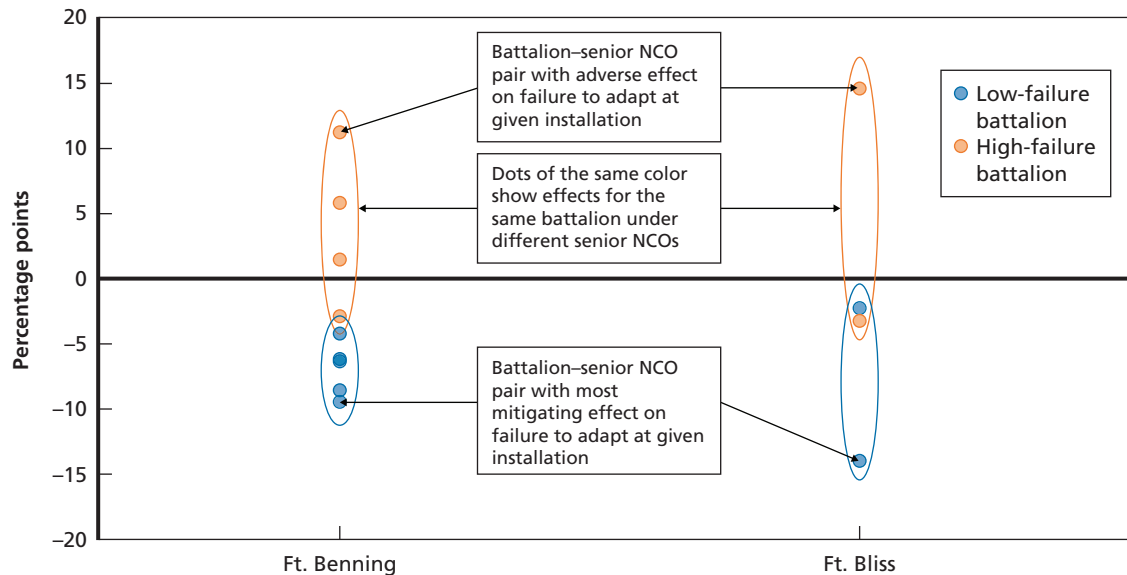
As an illustration, in Figure 4.8 we examine Fort Benning and Fort Bliss, the two installations in Figure 4.4 with the lowest and highest overall rates of failing to adapt (among our matched sample, at least). At each installation, we then identified the battalions with the most positive and most negative average effect on failure to adapt. These four battalions are the "most extreme" battalions at the "most extreme" forts. Each of these four battalions was led by different NCOs over the period covered by our sample, so we have a comparison for how the effect of "extreme" battalions changes under different leaders. The colored ovals group the battalion-NCO combinations representing the same battalion under different leaders.

Two patterns are apparent from Figure 4.8. First, the same battalion has different effects under different NCOs. This is apparent because the same-colored dots do not perfectly overlap. But, second, battalions are still quite distinct on average. This is apparent because the dots of different colors are not evenly distributed. No matter the senior NCO, the high-failure battalion at each installation tends to have more-adverse effects on failing to adapt than the blue battalion.

Figure 4.8 shows, that regardless of whether a soldier is assigned to a high-attrition or low-attrition installation and a below- or above-average-attrition battalion, individual probability of failing to adapt can still depend to a large degree on the senior NCO at the time (or on factors highly correlated with the time during which that NCO was in charge). These results are consistent with the theory that some unit culture matters, but they also suggest that any given battalion can see large changes in its effect on attrition over time.

²⁹ To produce differences in the observed NCO-specific effects, time-varying aspects of a battalion must be strongly correlated with changes in the senior NCO. Therefore, it is unlikely that frequently occurring or ongoing changes to battalion, such as regular personnel churn, would drive any NCO-specific effects. Conversely, infrequent events, such as a sustained operational tempo that spans the tenure of several senior NCOs, would not yield differences in the NCO-specific-effects for the NCOs who led the battalion during that time.

Figure 4.8
Example of Effects on Failure to Adapt for Battalions Under Different Senior NCOs



SOURCE: RAND Arroyo Center calculations from TAPDB-AE data.

NOTES: The figure shows an example of how combined battalion/NCO effects on failure to adapt can change when a battalion is led by different NCOs. Dots of the same color grouped in the same oval represent the same battalion at the same fort under different senior enlisted leaders.

Interpretation and Discussion

There are several potential pathways through which battalions and senior NCOs might affect first-term outcomes, and the relative importance of each pathway is ambiguous in the data. Below, we discuss some of these pathways. In the next chapter, our discussion of the qualitative interviews takes up these points further.

Overall, the pathways point to the potential for individuals' experiences in their first units to explain much of why they do or do not fail to adapt. Experiences stand in contrast to a soldier's personal characteristics, the Army's institutional characteristics, or aspects of a unit or installation that are immutable (such as its geographic location). In each of the pathways discussed below, individuals' experiences will differ depending on their particular battalion and senior NCO—for example, owing to different approaches to discipline, different approaches to mentorship, different deployment experiences, or differences in the nurturing of Army values and a sense of purpose.

The Importance of NCO Leadership Versus Battalion Culture

The random-assignment analysis was conditioned on senior NCO–battalion combinations, and the secondary analysis of NCO-specific effects showed that effects of particular NCOs explain some but not all of the average difference observed across battalions over time. This means that organizational drivers of failure to adapt are most likely due to fixed characteristics of battalions that differ across battalions *and* to something about an individual battalion that changes when senior NCOs change.

As an example of fixed characteristics that differ across battalions, a battalion may have a strong culture or identity that persists across NCOs. This culture could instill more or less dedication to the cause of the Army, resulting in more or less failure to adapt and reenlistment. In yet other cases, a battalion's operational circumstances may play a bigger role than its culture. For example, if one battalion at an installation deploys and the others do not, the deployment may explain differences in soldier-level outcomes rather than any particular characteristic about that battalion or its leader.

As an example of time-varying characteristics associated with changes in senior NCO leadership, consider characteristics of the leader. Some senior NCO leaders may exert strong influence over how a battalion handles discipline, mentoring, and training. This could have an indirect effect on failure to adapt and reenlistment. The next chapter highlights the perceived importance of mentoring (or lack thereof) in the eyes of some interviewees. Mentoring was viewed as integral for developing strong junior NCO leadership, which may in turn have effects on junior enlisted morale and behavior.

The Role of Peer Effects

Another possible explanation of the differences across battalion-NCO pairs is that they reflect differences in peer groups. We do not believe peer effects would be the primary source of the variation we measure. Although it is undoubtedly true that the average soldier in different battalions will have different characteristics, the differences are likely to be relatively small at the battalion level, compared with the company or platoon level, where they would be larger. Further, the most-influential peers are likely to be those with whom a soldier works every day—those in the same company, if not a smaller group.

Previous research is scant but generally found that, even at the company level or below, peer effects are small in magnitude even if they are statistically significant. Although the evidence does not speak to failure to adapt attrition, the findings our hypothesis that peer effects in a larger unit, such as a battalion, are likely to be dwarfed by the overall battalion-level effects plotted above. Karaca-Mandic and coauthors found small-magnitude peer effects on promotion time to E4: Increasing the fraction of females in a company by 1 percentage point decreases promotion time by two months, for a subset of females who promote quickly.³⁰ This is a 13 percent decrease in time, compared with the average. In a study of commuting to base, Morrison and Lawell found that increasing the number of carpoolers by 1 percentage point increases an individual's probability of carpooling by just over 0.5 percentage points.³¹ In a related but distinct population using random assignment to social groups at West Point, Jones and Kofoed found little evidence for peer effects on occupational preferences.³²

These studies suggest that variation in peer group demographics would have to be implausibly large to explain the observed differences in battalions and NCOs. Although some of our results may be due to peer effects, we believe that most of the effects are attributable to leadership, battalion culture, or a battalion's experiences, such as deployment, as will be discussed in subsequent chapters.

³⁰ Karaca-Mandic, Maestas, and Powell, 2013.

³¹ Geoffrey M. Morrison and C.-Y. Cynthia-Lin Lawell, "Driving in Force: The Influence of Workplace Peers on Commuting Decisions on U.S. Military Bases," *Journal of Economic Behavior and Organization*, Vol. 125, 2016.

³² Todd R. Jones and Michael S. Kofoed, "Do Peers Influence Occupational Preferences? Evidence from Randomly-Assigned Peer Groups at West Point," *Journal of Public Economics*, Vol. 184, 2020.

The Timing of Attrition Relative to Assignment

A further factor complicating the interpretation of our results is the timing of the outcomes relative to the timing of first assignment. The causal interpretation of the results says that different combinations of battalion and senior NCO *eventually* induce different rates of failure to adapt or reenlistment. The outcome, particularly in the case of reenlistment, may occur later after the soldier has been reassigned to a second or third unit. Therefore, the causal chain of events leading from a soldier's first assignment to eventual outcome is likely to be diffuse and indirect.

For example, a unit may have a culture of mentorship that sets up junior enlisted soldiers for success even in subsequent assignments. It may also have NCOs who instill Army values and curate a strong sense of mission and purpose, which junior enlisted soldiers take with them in subsequent units.

Exploring the Underlying Factors Influencing Soldier Attrition

In the previous chapter, we established that battalion-level factors including but not limited to battalion leadership do indeed affect first-term attrition outcomes. In this chapter, we explore what organizational attributes may lead to higher rates of attrition. These findings are based on the results of a small sample of semistructured interviews conducted at three installations with high numbers of Army privates. Interviewees were a mixture of continuing first-term soldiers and their chains of command through brigade level, separating first-term soldiers, and representatives of the chaplain and provost marshal offices. Because of the small sample size, these interviews are best seen as exploratory, for the purposes of generating testable hypotheses about causes of attrition.

In the rest of this chapter, we set out a number of explanations suggested by our interviews and discuss the ways in which they might contribute to first-term attrition. Our interviews suggested that NCO leadership, job-related issues, and operational tempo are relevant to attrition outcomes. Installation and division attributes, social support, family life, and the institutional needs of the Army were also factors mentioned by our respondents as relevant. These findings are consistent with recent literature employing the same types of methods across the other services suggesting that there are common forces in military life that shape military personnel professional and personal experiences—and ultimately their outcomes.¹

Enlisted Leadership as a Factor in Soldier Outcomes

Our interviews broadly suggested that leadership plays an outsized role in attrition outcomes. Squad and platoon leaders choose in whom to invest their limited time to provide guidance and mentorship. Higher-level echelon leadership, such as company and battalion commanders, also influence lower-echelon leadership by setting the tone and incentivizing certain types of behaviors over others. Most of the junior enlisted soldiers that we interviewed told us that leadership had an impact on their daily lives. This impact tended to fall into one of two extremes: some of them told us about the positive impacts that leaders had on them, while others attributed their problems in the Army to their leadership. In general, both positive and negative impacts focused on the relationship between junior enlisted personnel (i.e., E1 to E3) and their junior NCOs (i.e., E4 to E6). This section discusses the positive and then negative relationship

¹ Jennie W. Wenger, Maria C. Lytell, Kimberly Curry Hall, and Michael L. Hansen, *Balancing Quality of Life with Mission Requirements*, Santa Monica, Calif.: RAND Corporation, RR-2731-DHS, 2019.

between junior enlisted and junior NCOs, followed by the views of senior NCOs and officers we interviewed.

Soldiers Expressed Strong Views Toward Effective Leadership

The importance of leadership in military contexts is nothing new in the academic literature. Consistent with our findings in our interviews, research found that soldiers define *effective leaders* as those who care about soldiers, effectively train them, and possess professional knowledge.² For example, one junior enlisted soldier recounted that his first sergeant was the best part of being in his unit and that NCOs are respected more than officers. The soldier suggested that NCOs relate better to their soldiers than officers do.³ Similarly, another junior enlisted soldier told us that integration into her unit was fairly easy for her and that officers and NCOs respect soldiers and vice versa.⁴ Although her unit tolerates some problematic behavior by soldiers, she said that NCOs and commissioned officers tended to follow the book when dealing with several problems. For example, she told us that driving under the influence of alcohol and drug use would definitely get a soldier kicked out of the Army, while NCOs and officers would give soldiers who fail the Army's physical fitness test a few chances to pass it before they attrite.

In contrast, junior enlisted soldiers with negative views of NCOs tended to express strong views about their superior's leadership skills. For example, one junior enlisted soldier told us that although his "detachment family" is the best thing about being in the unit, there was nothing good about his company because of a "creeper" NCO. The soldier continued to explain how toxic leadership is, in his view, the worst thing about being in his unit.⁵ In another example, a junior enlisted soldier explained how her unit does not work well together and attributed this to sergeants who do not really know what they are talking about, leading people to not get along. This soldier told us that she rarely interacts with her platoon sergeant and rarely receives one-on-one feedback from officers or her NCOs. She also explained to us that NCOs and officers would prefer to discharge ("chapter out") problematic soldiers instead of working with them.⁶

NCOs Have Little Information About Soldiers When They Arrive

From the small number of interviews of senior NCOs (including sergeant, staff sergeant, sergeant first class, and master sergeant), we found some evidence that leaders had limited information about the soldiers who entered their units. For example, one senior NCO told us that he wished leaders had more access to soldiers prior to their arrival at the unit. He noted that he would like to see disciplinary records that might show patterns of misconduct, rather than trying to figure out whether this behavior is the norm upon arrival.⁷ In another interview, a senior NCO told us about his view of why soldiers attrite, which largely focused on the individuals and need for leaders to help them. Specifically, he told us that there are "soldiers who don't want to put in the effort. Basically, kids [who are] 18- or 19-year-olds trying to find

² Wenger et al., 2018.

³ Installation 3, May 2018.

⁴ Installation 2, April 2019.

⁵ Installation 2, April 2019.

⁶ Installation 1, May 2018.

⁷ Installation 3, May 2018.

themselves. Needs somebody who takes the time to mentor them. . . . Need to get to know them; some NCOs do.”⁸

Soldiers’ Engagement with Their Job Shaped Overall Perspectives

Researchers have been examining the influence of military jobs, the characteristics of those jobs, and job satisfaction on attrition in the Army for some time.⁹ Those early studies found that the types of jobs matter for attrition;¹⁰ that job satisfaction is related to the attributes of a job, including a soldier’s perceptions of control, variety, and meaningfulness of their job;¹¹ and that, in turn, job satisfaction is related to the likelihood of attrition.¹² More-recent studies have found that job satisfaction does not predict attrition in the same way that it might for civilian jobs,¹³ although it is associated with the likelihood of reenlistment.¹⁴ From the interviews with junior enlisted soldiers and their commanders, several themes emerged related to a soldier’s experience with their job. These are discussed below.

There Is a Perceived Underlying Hierarchy of MOSs

In our discussions with soldiers, a few noted noncombat MOSs being less respected, particularly in certain installations. In an installation where physical fitness was emphasized, one separating soldier commented that being in a noncombat MOS, where a lot of time was spent in an office behind a desk and less time out in the field, placed him at a disadvantage in terms of progressing in the Army relative to a soldier in a combat MOS. This soldier perceived that being in a noncombat MOS meant fewer opportunities to hone physical fitness to prepare for PT tests and physical readiness requirements. Along those lines, the soldier commented:

I don’t get as much as other MOSs with PT, and who have the time to be able to go to the gym. I cannot compete with someone who has opportunities to work out three times a day. There are soldiers in MOSs who work directly with leaders.¹⁵

⁸ Installation 3, June 2019.

⁹ John P. Allen and D. Bruce Bell, *Correlates of Military Satisfaction and Attrition Among Army Personnel*, Alexandria, Va.: U.S. Army Research Institute for the Behavioral and Social Sciences, 1980; Richard Buddin, *Determinants of Post-Training Attrition in the Army and Air Force*, Santa Monica, Calif.: RAND Corporation, P-6709, 1981; Andrew I. Kohen, *Attrition from Military and Civilian Jobs: Insights from the National Longitudinal Surveys*, U.S. Army Research Institute for the Behavioral and Social Sciences, 1984.

¹⁰ Buddin, 1981.

¹¹ Allen and Bell, 1980.

¹² Kohen, 1984.

¹³ Rodney A. McCloy and Dan J. Putk, “Modeling Unit Attrition.” in William Strickland, ed., *A Longitudinal Examination of First Term Attrition and Reenlistment Among FY1999 Enlisted Accessions*, Arlington, Va.: U.S. Army Research Institute for the Behavioral and Social Sciences, 2005.

¹⁴ Huy Le, “Modeling Reenlistment,” in William Strickland, ed., *A Longitudinal Examination of First Term Attrition and Reenlistment Among FY1999 Enlisted Accessions*, Arlington, Va.: U.S. Army Research Institute for the Behavioral and Social Sciences, 2005.

¹⁵ Installation 1, May 2018.

That same soldier commented that although his squadron sees physical fitness as its highest priority, the nature of his job, which is to spend long hours in front of the computer, does not support the squadron's expectations. Although some of these concerns expressed go back to the very nature and relationship of combat versus noncombat MOSs, it might be the case that soldiers in combat MOSs—particularly in physically demanding installations—may be less likely to receive additional attention by supervising NCOs to get them more ready, especially if they are assigned to units in which they are underrepresented relative to combat MOSs. This suggests that a hierarchy of MOSs exists and that being in a particular MOS affords a soldier *prestige* that then attracts a different level of leadership attention and engagement. In turn, for those soldiers who may be struggling with PT or other Army requirements, they may be less likely to receive the attention from leadership to assist them in meeting the requirements, especially if they are struggling to meet them. When asked whether their MOS was respected, two soldiers in separate interviews working as truck drivers who were interviewed and similar replies: “Not respected. Nobody likes to be a truck driver or in a sustainment unit.”¹⁶ “No. I don't know if it is because of other people before doing this job. I've been told that my job doesn't do anything. Why do they need a whole MOS for it?”¹⁷

On the other hand, there is also this notion that soldiers in certain high-demand MOSs were less likely to be *allowed* to attrite. One interviewee noted:

If a soldier is in a unique MOS, and the only MOS in that small unit (company, battery), then there could be a time when the commander looks the other way. When what is required UCMJ [Uniform Code of Military Justice] action, commander has wide latitude. For example, if the soldier is the only linguist. Or, if a soldier has a clearance, as a TS [Top Secret] or SCI [Sensitive Compartmented Information] clearance, and only one in the unit, low level, low threat trouble, commanders might do the verbal counseling. If they have an individual who violates UCMJ, a derogatory report is supposed to be issued. It is compulsory to issue the derogatory report, but they might not do it.¹⁸

Some Soldiers Reported a Poor Match to Their MOS

We heard numerous instances of a mismatch between a soldier and their MOS. In many cases, soldiers' duties were not matched to their expectations, or they had selected an MOS without thought as to its match and alignment with future career and life plans. In some cases, soldiers noted that they did not look at their selection of an MOS as a matter of choice but rather an immediate need or expediency. One soldier noted in their interaction with their recruiter and their choice of their MOS, “It was not a conversation about choice. Looking at it now, I should have done something else, like become a SWAT or police officer.”¹⁹ Another soldier noted that they did not speak with their recruiter about trying to link their MOS to their long-term career plans. On the other hand, one soldier at a different installation noted that they “didn't care about the money, just wanted something that transfers over to the civilian world, like HR.”²⁰

¹⁶ Installation 1, May 2018.

¹⁷ Installation 1, May 2018.

¹⁸ Installation 3, June 2019.

¹⁹ Installation 3, June 2019.

²⁰ Installation 2, April 2019.

Soldiers reported employing a fraction of what they were trained and prepared to do in their job at the duty station. One soldier explained, “It’s not what I expected when they said driving—I mean I thought we were going to be driving everything. But we only drive certain things, like my unit we only have three out of like eight trucks that we are actually qualified on to drive.”²¹

Soldiers can choose to reclassify (*reclass*) at the point of their reenlistment. However, as previous research has shown,²² the likelihood of reenlistment may be related to experiences on the job. Thus, soldiers’ current job experiences and expectations about whether reclassifying to another MOS will make a difference may be an important determinant of whether they ultimately choose to reenlist.

Monotony, Lack of Purpose, and Performing Unrelated Tasks Were Frequently Mentioned

The monotony of the tasks undertaken at soldiers’ duty station, their lack of understanding of how those tasks related to the broader Army mission, and how it related to their actual MOS was consistently brought up in the majority of our individual interviews with soldiers. When asked about their MOS, soldiers would respond in ways that suggested their day-to-day tasks were monotonous and repetitious. One soldier noted, “I’m neutral about it; it’s work. Can be demoralizing sometimes because we’d be doing something and a lot of hurry up and wait.”²³ Another soldier commented, “Too little to do. When we are in the garrison after being out in the field there’s a lot to do for a time. That’s a week. Then we run out of stuff and the waiting begins. Four out of 12 hours we are doing nothing.”²⁴ There were several instances of soldiers expressing their lack of understanding of how their duties advanced the mission of the Army or that their activities seemed haphazard—for example, in this case: “Most of what a soldier does is small details, not really doing what a soldier signed up to do,”²⁵ as well as, “Twenty-percent related to the job, 80 percent random taskers.”²⁶

Despite numerous instances of dissatisfaction with their job, there were also instances of soldiers noting that they were satisfied with their work. For example, when given an opportunity to perform tasks related to their work, one soldier who was separating before completing the contract noted, “My job challenges me in a positive way when we can do our job.”²⁷ In some cases, soldiers noted the positive aspects of their job despite them noting that a lot of what they did on a day-to-day basis was unrelated to their MOS: “My job lets a soldier use personal initiative and judgment. You can figure it out yourself and always ask for help.”²⁸ Another soldier noted, about being an 11B: “I am doing what I signed up to do. My MOS fits with my skills and interest, and I am satisfied with my MOS. Wouldn’t change it.”²⁹

²¹ Installation 1, May 2018.

²² Le, 2005.

²³ Installation 1, May 2018.

²⁴ Installation 2, April 2019.

²⁵ Installation 1, May 2018.

²⁶ Installation 1, May 2018.

²⁷ Installation 2, April 2019.

²⁸ Installation 2, April 2019.

²⁹ Installation 2, April 2019.

We did hear from soldiers and commanders that soldiers do get the opportunity during deployments to do work that is more closely related to their MOS. Soldiers who had previously deployed noted that they performed tasks that they perceived as advancing the objectives of the mission and the Army and that there was more cohesion and camaraderie within the unit. One NCO summarized these issues in this manner:

Soldiers drink from the firehose for six to eight months to get to deployment, and they get there and they are treated like an adult. And they come back and it's not the same—they are drinking from the firehose again. They lose the belief; they're not inspired anymore. They don't understand it's the circle of life. It burns them out, and they don't have the personality to deal with that kind of stress.³⁰

In fact, soldiers who first arrive at a duty station after their unit had already deployed reported facing particularly challenging transitions. One soldier noted, “Our motor pool is empty. We have nothing to do but rearrange junk.” And another in the same group added, “I've heard that's how it is: You're either in the rear doing nothing, or you are training, training, doing nothing with it or for no end.”³¹

Senior NCOs Play an Important Role in Influencing a Soldier's Experience with a Job

The important role of leadership was brought up frequently during the interviews with soldiers. The phrase *lead from the front* was often used to describe good leadership by soldiers. Soldiers also envisioned good leaders as those who engaged with soldiers regularly and attempted to get to know them better, as opposed to spending their time trying to advance their own career in the eyes of their leadership. A former commander we spoke with expressed a leader's role when a soldier is in danger of attriting in these terms:

When I was a commander and a soldier wanted to get out, it was a cry for help. They wanted somebody to talk to them about what it means to serve. Why are you doing it? What is your ultimate goal? Usually when leadership talked to them, they switched. They are not cornered into one job, but they can reenlist for a different job. Does the military not suit you? If the answer is no, then your job [as commander] is to assist you to prepare you for that eventual ETS [expiration—term of service].³²

Leadership plays a key role in mitigating some of the issues that soldiers run into in their first term, including those related to a soldier's job. Leadership not only decides on what tasks a soldier will be working on, but also assisting a soldier in the transition from training to Army life and explaining how their work tasks and daily requirements are connected to the broader mission of the unit and the Army. One soldier noted: “Coming from basic to AIT [advanced individual training] to here, it's culture shock. Basic and AIT, you rely on your cadre. There's no transition between training and the 'real' Army. It's a hard change. It's not completely unpleasant, but it's weird.”³³

³⁰ Installation 1, May 2018.

³¹ Installation 3, June 2019.

³² Installation 3, June 2019.

³³ Installation 3, June 2019.

Soldiers Often Reported Having Limited Time Outside Work

A number of soldiers reported difficulty carving out personal time outside work or managing the unpredictability of their work hours and work obligations. This is particularly difficult for soldiers with childcare responsibilities. They may frequently be faced with making arrangements for childcare on short notice.³⁴

Training Cycles and Calendar Issues Were Frequently Raised

In focus groups and interviews, soldiers at multiple installations indicated that the pace of training calendars leads some soldiers to leave the Army. Soldiers reported that the intensity of the training calendar was exacerbated by two factors. First, soldiers did not necessarily understand why a given training exercise was necessary, and there was a compounding effect when multiple training exercises were planned within the period of a few months. Second, soldiers reported feeling that the training calendar was not always communicated to individuals in a timely manner in advance, making it difficult to plan other aspects of their lives. Although increased advanced communication would not completely abate the stresses of fast-paced training calendars, soldiers reported that more-advance notice would mitigate the related stress. The research previously cited is relevant in this context: Workplace-related stress that hinders performance is more likely to induce dissatisfaction and employee turnover, compared with stress-inducing activities that challenge workers and make their job more interesting and fulfilling.³⁵

In determining how training-calendar intensity affects soldier first-term attrition, we identified two potential mechanisms. First, the reported unpredictability of the training calendar had the potential of increasing stress, to which some soldiers coped poorly (through alcohol, drugs, or other behaviors), leading to involuntary separation. Second, intense training calendars put stress and demands on unit leadership at the company, battalion, brigade, and installation levels, compressing their time available to interact with and mentor soldiers and limiting their ability to invest in individual soldiers who may be falling behind.

Poor Communication Affected Soldier Planning

First-term soldiers reported two specific frustrations regarding their company and battalion leadership's communication with respect to training exercises: the overall purpose of training exercises (particularly when a series of training exercises was scheduled over a short period) and the amount of advance notice soldiers were provided regarding the timing of future exercises.

As reported by interviewees, the reclassification of units is one factor driving an increase in training requirements. As the Army shifts its mission from counterinsurgency in Iraq and Afghanistan to near-peer competition, certain units experience a change in their Mission Essential Task List (METL), determining their necessary readiness training requirements. For example, one interviewee reported that a division had reclassified three times between 2015 and 2019, requiring brigade-level training and rotations to the National Training Center (NTC) in Fort Irwin, California, two times within a six-month period to meet the METL for

³⁴ This was explicitly identified as an issue among U.S. Coast Guard personnel in a RAND report referenced previously (Wenger et al., 2019).

³⁵ Podsakoff, LePine, and LePine, 2007, p. 438.

the reclassification.³⁶ However, soldiers indicated that they did not know why the reclassification was necessary. The interviewee further noted that there was also a perception that some NTC rotations were discretionary, leading soldiers to feel as though their leadership did not care about the impacts additional rotations had on soldiers' lives.³⁷

Soldiers also reported a sense that they were not provided with enough advance notice regarding upcoming training exercises. Although training calendars are briefed and shared, soldiers reported finding out about some week- to month-long training exercises only a week in advance.³⁸ Although this specifically affected soldiers with families, soldiers with and without families reported frustrations. Further, there was a sense among some interviewees that their leadership was intentionally withholding "bad news." For example, one soldier assigned to an administrative position within a commander's office reported that he overheard unit leadership debating when to tell the soldiers about an upcoming scheduled training exercise, knowing that it would be poorly received.³⁹

Although unit leadership has limited control over the training requirements, interviews with soldiers indicated that increased communication and leadership involvement could mitigate the stress that soldiers experience regarding the training calendar. Unit leadership can foster a sense of predictability by communicating training information as early as possible, allowing soldiers (and their families, where applicable) to appropriately plan for training demands. Moreover, although recognizing that unit leadership and NCOs face the same time constraints as their soldiers regarding the training calendar, an emphasis on actively mentoring first-term soldiers may serve to mitigate minor challenges before they escalate into attrition.

Burnout and Family Stress Was at Times Attributed to the Training Calendars

Another reported implication of heavily scheduled training calendars was a sense of burnout. For example, units from at least two of the installations we interviewed reported high rates of participation in the Joint Readiness Training Center, NTC, deployments to Iraq and Afghanistan, and rotations in Europe and Korea.⁴⁰ Interviewees reported being away from their home and the installation for six to nine months of the previous year.

Although the training pace affected all soldiers, those with families reported additional stress related to the training calendar, travel schedule, and accompanying fatigue. As one interviewee noted about soldiers, "They are gone a lot. When you do have time at home, they are coming out of the field—tired and grumpy. And their spouses are stressed because they've been gone."⁴¹ Interviewees reported that individuals from dual-enlisted families, single-parent families, or families in which partners worked full time faced additional challenges, particularly if a training exercise was communicated on short notice.⁴² A lack of communication affected parents' ability to plan for childcare ahead of time, increasing their stress levels at home. Soldiers

³⁶ Installation 2, April 2019.

³⁷ Installation 2, April 2019.

³⁸ Installation 2, April 2019.

³⁹ Installation 2, April 2019.

⁴⁰ Installation 2, April 2019.

⁴¹ Installation 2, April 2019.

⁴² Installation 2, April 2019.

who raised concerns over their ability to schedule childcare for a short-notice training exercise then felt that they were seen as “less committed” by their commands.⁴³

Soldiers Reported Inability to Pursue Opportunities Outside Work Hours

Soldiers reported frustrations with their inability to pursue opportunities outside work hours, particularly as it related to the training calendar. Most notably, soldiers were frustrated that they could not take advantage of educational opportunities or tuition assistance because of training demands. Field exercises precluded those individuals willing to take night or weekend courses. One soldier who joined the Army specifically for the educational benefits noted that, after researching local community college options, he “wouldn’t be able to [pursue the option], not in [his] unit.”⁴⁴

Additionally, for those individuals who chose their installations based on lifestyle or recreational activities tied to the installation location, some interviewees reported a frustration that the training calendar precluded them from taking part in activities outside work. At one installation, an interviewee noted: “Everything around us is beautiful, while [we]’re stuck on [the training range].”⁴⁵

Installation Living Conditions and Amenities Influenced Soldier Reported Quality of Life

Installation-specific living conditions—including access to desirable housing, retail options, transportation, education, and medical care—played varying roles in interviewees’ levels of satisfaction or frustration at their installation. First-term and young enlisted soldiers reported that barracks housing and transportation options played the most-significant roles in their satisfaction levels.

Living Conditions Affect Soldiers’ Overall Perceptions of the Army

Soldiers’ access to quality housing and transportation affects their overall perception of life in the Army. Although first-term soldiers are not necessarily motivated to leave the Army as a direct result of suboptimal options, poor housing options and transportation issues may exacerbate other stresses and lead to a soldier choosing to separate from the Army.

Barracks Conditions and Location Were Important Factors

Soldiers reported two factors regarding barracks that mattered to them. First, barracks conditions (including cleanliness, layout, and amenities) contributed to or detracted from their quality of life. Second, the physical location of the barracks and the distance between the barracks and unit headquarters and other important locations (such as grocery stores, gyms, and retail options) also played a role in soldiers’ quality of life. Although some soldiers reported frustrations with their barracks conditions, others noted that living in the barracks provided them

⁴³ Installation 3, June 2019.

⁴⁴ Installation 2, April 2019.

⁴⁵ Installation 2, April 2019.

with a certain amount of support by people who understood the demands of their job and a relative enjoyment of “living with buddies.”⁴⁶

Barracks Conditions

Soldiers reported a range of barracks conditions.⁴⁷ Soldiers in newly constructed barracks reported a general satisfaction with their housing options. Soldiers in older construction reported issues with the available amenities and general maintenance in their barracks buildings. For example, insufficient temperature control (particularly a lack of adequate air conditioning) was a common complaint raised by soldiers who lived in older barracks.⁴⁸ Adding to soldiers’ frustrations with respect to barracks conditions was the sense that a soldier’s individual living conditions were more a matter of chance than deliberate planning, as an individual’s assigned barracks (and therefore housing conditions) depends on assignment to a unit rather than a soldier’s preference. Soldiers of similar ranks reported comparing their barracks conditions with counterparts from other units, contributing to some soldiers’ sense of deprivation with respect to their assigned barracks.

Deliberate architectural choices may also affect soldiers’ quality of life. In an effort to afford more autonomy to soldiers in the barracks, Installation 2 built outward-facing barracks with the intention of allowing soldiers to feel more like they were living in individual apartments. However, some soldiers (particularly those used to traditional, inward-facing barracks) reported that the design can feel isolating. An installation leader noted that traditional floorplans provided the added benefit of the expectation that everyone could see what was going on in a given barracks room, contributing to order in the barracks, which was lost with the new layout.⁴⁹

Although some soldiers reported frustrations with the physical infrastructure that may require investment to fix or upgrade, soldiers also reported frustrations with issues of cleanliness and order in the barracks. Commonly reported frustrations included unclean shared spaces (such as kitchens and bathrooms) and loud floormates.⁵⁰ Cleanliness and order issues could be mitigated through better and more-consistent discipline enforcement by the officers and NCOs in charge.

Junior soldiers are required to live in the barracks unless they are married. Interviewees reported that the prospect of marriage became appealing to some as a way to move out of the barracks. One soldier at Installation 3 reported that she recently got married and that a driving factor in the timing of her marriage was the ability to move out of the barracks.⁵¹

Barracks Location

Soldiers indicated that the physical location of barracks could exacerbate other stressors on the installation, particularly if they did not own a personal vehicle. The distance between a soldier’s barracks and unit headquarters was the most reported factor that was important to sol-

⁴⁶ Installation 2, April 2019.

⁴⁷ Installation 3, June 2019.

⁴⁸ Installation 2, April 2019.

⁴⁹ Installation 2, April 2019.

⁵⁰ Installation 3, June 2019.

⁵¹ Installation 3, June 2019.

diers' satisfaction, particularly because of the early times soldiers report for PT in the morning. Soldiers without a personal vehicle reported that they were able to coordinate transportation to their unit with other soldiers in the barracks who had vehicles—so long as their schedule was predictable. However, some soldiers reported that their unit leadership (company commanders and NCOs) would, at times, alert them of a change in workday start times at a late hour the night before, giving soldiers living in the barracks a limited ability to schedule rides for the following morning.

The distance between the barracks and food options (including the dining facility [DFAC], fast food restaurants, and the commissary) played a role in their satisfaction. Soldiers without a vehicle could generally access a DFAC within their barracks and unit footprint on weekdays but had fewer food options on the weekends. Those without vehicles noted that they would have to walk much further to find food on the weekends.⁵² Some also reported using taxi services or ride-hailing apps as a means to grocery shop or pick up a meal, at times paying more for their transportation than the meal itself.⁵³ Similarly, soldiers from each of the installations reported a large number of retail and food options off post but cited transportation as their key challenge.⁵⁴

Emphasis Placed on Issues Related to On-Post Housing, Medical Care, and Education Varied

Married soldiers and soldiers with families have the option of moving into on-post housing. Married soldiers are also allowed to live off post and are provided with a housing allowance, although on-post housing presents the most affordable option, particularly for junior or first-term soldiers. Housing neighborhoods are based on a soldier's rank and associated unit. Just as soldiers reported with respect to barracks conditions, soldiers reported a distribution in the quality of on-post housing options, as some units were assigned more newly constructed or updated homes than others. Soldiers reported a sense that chance played a larger role in housing assignments than their stated preferences.⁵⁵

On-post housing can provide the benefits of support and community. Installations reported that housing neighborhoods and community centers try to bring soldiers and their families together and keep residents informed through newsletters and social media. Neighborhood cultures can provide support to families during deployment. However, some soldiers reported that the nature of sharing both office space and neighborhoods with the same individuals can be stressful.⁵⁶

The variance in housing quality, both for single soldiers in the barracks and married soldiers in on-post housing, increased soldiers' perceptions that the quality of their living arrangements was left to a matter of chance. Army and installation investments into increasing the quality of housing for all soldiers may reduce the perception that some soldiers are unfairly penalized in their housing options solely as a factor of the unit to which they are assigned.

First-term soldiers and other junior soldiers living in the barracks might not have their own vehicles. Predictable schedules enable soldiers in the barracks to arrange transportation,

⁵² Installation 3, June 2019.

⁵³ Installation 2, April 2019.

⁵⁴ Installation 2, April 2019.

⁵⁵ Installation 3, June 2019.

⁵⁶ Installation 2, April 2019.

particularly for early-morning PT calls. Unit leadership can improve soldiers' experience by providing predictable schedules and advanced notice for variation in schedules. Additionally, units could organize transportation for their soldiers in cases when schedules or training locations change.

Soldiers with spouses and families reported that access to medical care and quality education were important factors in their consideration of remaining on active duty. However, soldiers within their first term were less likely to have spouses or families; thus, those considerations did not necessarily affect soldiers' decisions to remain in the Army through the terms of their contract.

Social Support May Reduce Likelihood of Attrition

As with previous RAND research findings focused on an in-depth qualitative look at the experiences of a junior enlisted soldier, the importance of social support came through in this research with more-specific attention paid to how those experiences relate to attrition.⁵⁷ When attrition is viewed as a complex process, the importance of social support to preventing attrition becomes evident. Soldiers may derive motivation and assistance in surmounting problems as a result of their relationships outside work. The soldiers in our sample typically reported that they either relied primarily on their families or on those in the military for social support. Other research found that military personnel do rely a lot on the Army for support to address problems and concerns; however, access and utilization can be an issue, and the types of supports they rely on vary across installations.⁵⁸ The marital status of personnel appeared to be a key reason soldiers sought support from one or the other sources. For example, one junior enlisted soldier told us that she rarely goes to anyone at work regarding problems there and would prefer to seek support from her husband instead.⁵⁹

Unmarried soldiers in our sample tended to seek support from their units or NCOs. One single junior enlisted soldier told us that he typically tries to seek out support from his coworkers—whom he described as his “buddies”—when having personal problems outside work.⁶⁰ And when he is having problems at work, this soldier tries to directly talk with the person in his unit who is causing the problem and, when necessary, goes to leadership or senior specialists. He never seeks support from those holding a lower rank than him, however.

Another junior enlisted separating soldier explained to us that he did not socialize with people in his unit, did not socialize with people from other units, and did not feel excluded.⁶¹ This separating soldier largely viewed his unit as a collection of cliques, explaining, “every person has their own group of friends, cliques, and these are based on platoons.” When asked why he was separating, the soldier explained how he was not able to go to Air Assault School;

⁵⁷ Todd C. Helmus, S. Rebecca Zimmerman, Marek N. Posard, Jasmine L. Wheeler, Cordaye Ogletree, Quinton Stroud, and Margaret C. Harrell, *Life as a Private: A Study of the Motivations and Experiences of Junior Enlisted Personnel in the U.S. Army*, Santa Monica, Calif.: RAND Corporation, RR-2252-A, 2018.

⁵⁸ Carra S. Sims, Thomas E. Trail, Emily K. Chen, Erika Meza, Parisa Roshan, and Beth E. Lachman, *Assessing the Needs of Soldiers and Their Families at the Garrison Level*, Santa Monica, Calif.: RAND Corporation, RR-2148-A, 2018.

⁵⁹ Installation 3, June 2019.

⁶⁰ Installation 3, June 2019.

⁶¹ Installation 3, June 2019.

his NCO accused him of malingering; his car broke down and he missed a key event, which led to a chapter; and then he failed his PT test another time. During this sequence of events, the separating soldier explained the lengths he took to get reassigned to different units, including seeking help from the chaplain, behavioral health professionals, and even his sergeant major.

A different separating junior enlisted soldier explained how the Army served as a primary source of support during a series of traumatic events that occurred in his life.⁶² Specifically, he sought therapy from behavioral health services when there was a death in his family. His old staff sergeant was the most influential to his success in the Army, telling us, “[He] taught me everything I know.” When having problems at work, he tried to “tough it out” but would then find an NCO he could trust but noted that one should never talk to a higher-ranking soldier about problems with other higher-ranked soldiers.

This separating soldier described a sequence of stressful life events that led the Army to discharge him. He described conflict with his parents back home, death in his family, divorce, problems with an ex-girlfriend he dated after the divorce, legal problems, and then conflict with a series of NCOs. In the past, this soldier developed strong relationships with two NCOs he looked up to and trusted, but then one of them deployed and the other changed duty stations. The result was that he felt alone around the same time that he confronted a series of stressors. His legal problems—and the lack of perceived support from his current NCO—resulted in what he described as the “Army completing the decision for [him to chapter out].” He continued, “I really wanted to stay in.”

Sources of Social Support Included Both Family and Leaders

Similarly, senior NCOs recognized the importance of social support within units as a key factor for developing quality soldiers. One senior NCO told us that team leaders (i.e., sergeant or corporal and sometimes specialist) and squad leaders (i.e., staff sergeant or senior sergeant) were important sources of support for soldiers with personal problems.⁶³ This NCO also told us that sources *outside* units were also important, including chaplains and behavioral health professionals.

The same NCO also told us there was good social support, given that there are “plenty of sources for [soldiers] to communicate. Units have chaplains and a chain of command very adamant about ensuring soldiers are approachable.” He went on to note that he tries to make himself accessible.⁶⁴ Results from the few senior NCOs that we interviewed suggested that social support largely depends on the leadership climate of units. For example, one NCO explained to us that the social support of units and the first duty station is critical for soldiers’ success:

[The] first duty station to a soldier is critical. [This installation] for a first-term soldier is demanding. Most young people who come in have high energy. Take PT seriously. . . . If you don’t have any issues doing physical readiness training, you will be alright. Issues with running or rucking, not a good duty station. Can work on those things, I believe people can change if they really want to. Helps to have support, especially support of chain of command.⁶⁵

⁶² Installation 2, April 2019.

⁶³ Installation 3, June 2019.

⁶⁴ Installation 3, June 2019.

⁶⁵ Installation 3, June 2019.

We found that soldiers in our limited sample tended to seek social support from their immediate family or their peers and junior NCOs in the military, with what appeared to be fewer mentions of other sources of support (e.g., formal military support programs and family back home). On several occasions, soldiers mentioned the importance of their NCOs in providing them social support. These themes align with other qualitative studies showing that soldiers value the camaraderie and social ties that form within their units.⁶⁶ For the soldiers in our sample who attrited early, we found some evidence that attrition can become a vicious cycle in which a set of life circumstances converge at points that make failure almost inevitable. This pattern supports results showing that attrition is less about a single decision and more about a process of decisions that occur in a soldier's life.⁶⁷ Thus, we hypothesize that a series of setbacks early on for a soldier's Army career may be setups for future failures. It seems that social support—particularly NCOs—may buffer soldiers from the prospect of this downward spiral.

Family Life Stressed Soldiers but Was Not a Major Factor in Separations

Overall, the small number of soldiers we interviewed did not mention family life as a key source of problems in the military. Among soldiers who were completing their full term, several mentioned the unique demands of family life on an Army career, but they rarely were a key source of problems that soldiers expressed. Similarly, family life appeared to be more of a contributing than key factor for why soldiers were separating early from the Army. This issue is worth further exploration. Other research on this topic employing survey techniques found that junior enlisted soldiers reported common problems shared with the more-senior enlisted soldiers and leadership but also reported issues that are less common among the higher-ranking groups.⁶⁸

Marriage May Add to Some Stressors for Soldiers

One married junior enlisted soldier told us that the biggest thing affecting his family life was leave because, in his unit, soldiers “cannot take leave for more than one and a half weeks unless you have solid reasons why.”⁶⁹ Another junior enlisted soldier also mentioned work schedules as a key source of problems for her.⁷⁰ Specifically, she explained how her husband was also in the military, and conflicting schedules meant that they were never home together and did not really see each other. This same soldier did explain, “Other soldiers understand. Everyone has a family. NCOs never seem to go home. Officers go home.”

A divorced junior enlisted soldier who was separating early explained to us in one interview that being an unmarried soldier is better since you do not have to worry about upsetting people

⁶⁶ Helmus et al., 2018; Lucas, Jeffrey W., Yuko Whitestone, David R. Segal, Mady W. Segal, Michael A. White, Jacqueline A. Mottern, and Rorie N. Harris, *The Role of Social Support in First-Term Sailors' Attrition from Recruit Training*, Millington, Tenn.: Navy Personnel Research Studies and Technology, 2008.

⁶⁷ Stephen P. Klein, Jennifer Hawes-Dawson, and Thomas Martin, *Why Recruits Separate Early*, Santa Monica, Calif.: RAND Corporation, R-3980-FMP, 1991.

⁶⁸ Carra S. Sims, Thomas E. Trail, Emily K. Chen, and Laura L. Miller, *Today's Soldier: Assessing the Needs of Soldiers and Their Families*, Santa Monica, Calif.: RAND Corporation, RR-1893-A, 2017.

⁶⁹ Installation 2, April 2019.

⁷⁰ Installation 2, April 2019.

at work or home.⁷¹ This soldier described the difficulties he had while dealing with marital infidelity by his then wife, going through a divorce while in the Army, and then trying to date again while maintaining the personal view that the “Army comes first; it’s life.” An unmarried soldier who was completing his full term explicitly told us that “it’s great to be unmarried in the Army” because, “if you deploy, you have no worries about spouse or children.”⁷² Similarly, one NCO we talked to also recognized the strain of having a family while in the Army. One NCO explained the role marital issues played within his unit and provided a specific example of a soldier in his unit. He gave an example about a soldier whose spouse left him with their two kids, and it was a struggle for the soldier to adjust his whole schedule around the kids (e.g., daycare drop-offs and pickups) during the workday.⁷³

Unsurprisingly, the few soldiers we interviewed told us that they had problems managing the unique demands of having a family while serving in the military. In the sociology literature, both the military and the family are referred to as *greedy institutions*, meaning that both demand significant time, attention, and commitment from personnel and their dependents.⁷⁴ Similarly, recent surveys have found that work-life balance is one of the most pressing problems facing soldiers, and research has consistently found that family well-being is a key predictor for retention decisions of personnel.⁷⁵

Institutional Needs May Affect Behavior Across the Force

Although most respondents tended to highlight the importance of the unit or organizational culture, several did address broader institutional aspects of first-term attrition. For the purposes of this study, these refer to the policies and processes pertaining to the whole Army. To understand organizational attributes, we asked whether two soldiers sent to different units or different MOSs might have different attrition outcomes. However, to understand institutional effects, we asked whether two identical soldiers joining the Army at different points in time might have different attrition outcomes. The implication here is that Army-wide policies or procedures have an impact on attrition outcomes at the small-unit level.

Of the four respondents who discussed this issue with us, all believed that institutional decisions about Army size affected attrition at the unit level in some way. These interviewees reported that there were periods when it was more difficult to get low-performing soldiers out of the Army, although one senior enlisted soldier insisted that this did not change the outcome,

⁷¹ Installation 2, April 2019.

⁷² Installation 2, April 2019.

⁷³ Installation 3, June 2019.

⁷⁴ Mady Wechsler Segal, “The Military and the Family as Greedy Institutions,” *Armed Forces and Society*, Vol. 13, No. 1, 1986.

⁷⁵ Chris Bourg and Mady Wechsler Segal, “The Impact of Family Supportive Policies and Practices on Organizational Commitment to the Army,” *Armed Forces and Society*, Vol. 25, No. 4, 1999; Ann H. Huffman, Wendy J. Casper, and Stephanie C. Payne, “How Does Spouse Career Support Relate to Employee Turnover? Work Interfering with Family and Job Satisfaction as Mediators,” *Journal of Organizational Behavior*, Vol. 35, No. 2, 2014; Leora Rosen and Doris Briley Durand, “The Family Factor and Retention Among Married Soldiers Deployed in Operation Desert Storm,” *Military Psychology*, Vol. 7, No. 4, 1995; Sims et al., 2017.

just the level of effort involved.⁷⁶ A second soldier suggested that there was no official policy that would have made it harder or easier to chapter soldiers out of the Army; rather, there was “implied guidance.”⁷⁷ However, when asked where the Army was today in terms of a preference for quality over quantity in junior enlisted soldiers, one respondent expressed that the Army currently valued quality over quantity, while the other said that the reverse was true.⁷⁸ Although we did not set out to test a specific hypothesis, the responses suggest that our respondents deemed this to be an important issue even if they differed in their opinions on it.

Although we have limited evidence from the data we collected and analyzed on the influence of the broader institutional factors on soldier attrition, the exploration did highlight some important questions. It raises the possibility that there is a follow-on effect from policy setting on Army size: Whether intentional or unintentional, it is possible that end-strength targets may incentivize or disincentivize administrative separations in those cases in which discretion exists. Existing studies do point to the existence of *voluntary* and *involuntary* force-reduction measures that can signal that standards for retention will tighten. This, in turn, might induce personnel who feel at risk to choose to leave on their own.⁷⁹ This is worthy of future study because it suggests that some portion of attrition may be controlled simply by changing the messaging provided to the force about end-strength goals and attrition.

⁷⁶ Installation 2, April 2019.

⁷⁷ Installation 1, May 2018.

⁷⁸ Installation 1, May 2018.

⁷⁹ Maria C. Lytell, Kenneth Kuhn, Abigail Haddad, Jefferson P. Marquis, Nelson Lim, Kimberly Curry Hall, Robert Stewart, and Jennie W. Wenger, *Force Drawdowns and Demographic Diversity: Investigating the Impact of Force Reductions on the Demographic Diversity of the U.S. Military*, Santa Monica, Calif.: RAND Corporation, RR-1008-OSD, 2015.

Recommendations and Further Considerations

Looking Army-wide, first-term attrition is often seen as a negative phenomenon, and the institutional Army would like to see its attrition rate drop to maximize the return on the investment it makes in each soldier. On the other hand, in our interviews, unit leaders shared stories of soldiers who clearly should not have been left in the Army and whose removal from the ranks is a long-run benefit to the service. But perhaps what is most striking about this research is that the finding that, at the level of the individual soldier, attrition has a degree of randomness. Which unit a soldier is assigned to, whether an accident or injury occurs, and the point in a training cycle when the soldier arrived at the unit all may affect first-term completion. For many soldiers in the process of being chaptered out, this is not how they hoped their Army careers would end. Further study of the attrition process, and of interventions to arrest the cycles that lead to attrition, will reduce the arbitrariness of this process, ensuring that the Army makes the wisest choices possible about whom to keep and whom to let go, and giving each soldier the best shot at a successful career.

This research represents an initial exploration of first-term attrition as an organizational phenomenon in today's Army. The study demonstrated that unit-level factors (at the battalion level) do drive attrition over and above individual-level characteristics and that otherwise identical soldiers will encounter different first-term experiences that could yield very different outcomes. The qualitative interviews emphasized topics that merit further study as causal pathways for attrition, such as unit culture, leadership, and operational tempo.

Recommendations

Here, we provide a limited number of recommendations supported by both the quantitative and qualitative data collection and analysis and suggest a few areas for further investigation into soldier experiences at the unit level central to the Army's model of attrition.

Better Manage the Timing of New Soldier Assignments

The Army should consider the implications of assigning new soldiers to rear detachments for units currently deployed. Interviews with soldiers indicated that there was a negative effect on first impressions and morale. This would require the Army to have a good sense of which units were deploying at what times and to time basic training graduates' assignments to nondeployed units.

Train and Equip Recruiters to Advise Enlisting Soldiers on Critical Aspects of Their Enlistment, Including Match to MOS, Benefits, and Other Aspects of Army Life

Recruiters are incentivized to meet recruiting targets, including targets associated with MOSs. Soldiers looking to enlist may select an MOS without careful thought and consideration, frequently under pressure by the recruiter. However, this is not an effective way to ensure retention. Soldiers who select an MOS that is poorly matched to their interests may perform poorly in their position and ultimately end up not completing their term. Recruiters should also be adequately informed and equipped to accurately address MOS choice, spousal and child support and other basic benefits, and education benefits.

Provide Training and Support to NCOs Preparing to Take on a Leadership Position

Previous studies of leadership identified experience as a key factor associated with lower attrition among junior enlisted soldiers.¹ The Army should consider the experience of the senior NCO when making assignments, as well as provide training and supports to help leaders cultivate the skills to communicate, develop, and bring the best out of the soldiers they oversee. For example, a number of the soldiers we spoke with reported that they had minimal acculturation or mentorship upon arrival to help them adjust to their new environment. The Army might consider a more formal approach to acculturating incoming soldiers. Ongoing mentorship by NCOs to soldiers was highly variable according to our conversations, with some NCOs recognized as important mentors and others described as not willing to play that role. Efforts to encourage and reward good mentoring could help reorient leadership toward looking for ways to help junior enlisted succeed.

Further Considerations**Learn Why NCOs May Provide More Support to Some Soldiers over Others**

The NCO–junior enlisted relationship is key for understanding who may attrite; however, there are other aspects of a battalion that are also at play. Our quantitative research was able to demonstrate the importance of battalions to attrition outcomes, even across multiple senior NCOs. Our qualitative findings suggest that junior NCOs likely matter to attrition outcomes and could provide a mechanism for battalion-level effects. It could be that these junior NCOs imbibe the culture of the unit when they arrive and continue to engage in actions that promote that culture even after a senior NCO has left. Our interviews also suggested that NCOs are busy and make different choices about how much time to spend mentoring soldiers. Not all soldiers who need guidance receive it in equal measure. For example, some less experienced junior NCOs may focus on documenting underperformers over mentoring them. In a few interviews, soldiers and a senior NCO attributed this to the inexperience of junior NCOs.

Although the results of our interviews implied that NCOs have discretion in whom they help, we could not determine why NCOs decided to help some soldiers and not others. Additional research on this subject could determine whether NCOs are making high-quality determinations of whom to help or whether additional guidance is needed to ensure that NCOs are doing the best job possible of reducing attrition and building successful soldiers. Senior leaders at the battalion level also establish the behavioral incentives for more-junior NCOs, who

¹ Wenger et al., 2018.

are likely to have the most-frequent interaction with junior enlisted soldiers. Are these senior NCOs incentivizing platoon and squad leaders to force struggling soldiers out or to develop them and ensure that they complete their contract? A follow-up to this study might consist of examining the data to identify the top- and bottom-performing battalion-NCO combinations and conducting qualitative interviews with commanders, soldiers, and other personnel in these units to potentially uncover the mechanisms that are driving the differences in attrition rates.

Consider Adopting a Model of Attrition That Allows for a Greater Degree of Complexity and Interplay Between Quitting and Firing Behaviors

Attrition as it has been shown in this report is a deeply complex phenomenon that risks oversimplification because of one-sided data collection methods. Broadening the conversation about the processes that ultimately result in attrition is a needed first step. This could include adjustments to the way in which attrition data are recorded to bring to light more of the dynamics surrounding unit and soldier decisionmaking. This would both capture a more accurate record of the attrition process and allow for more-accurate future studies of the phenomenon. Moreover, viewing attrition as complex and multiphased suggests that there are multiple points of intervention where attrition may be reduced.

One aspect of this is a better understanding of unit hierarchy, the degree to which it varies in practice, and its implications. For example, in some units, there was clear vertical segregation between junior enlisted, NCOs, and commissioned officers, which is not too surprising, given the hierarchical rank structure of the military and the fact that fraternization is deemed to be a serious offense to military culture. That said, junior enlisted may have limited insight into the demands placed on their NCOs or commissioned officers. Thus, when underperforming soldiers are reprimanded by their NCOs (formally or informally), soldiers may attribute that to the whims of their NCOs instead of how their underperformance fits into the needs of their units or the Army writ large. Moreover, there were several examples that came up during interviews of the little information that junior enlisted have about how to shape their own fates. They seem to be at the mercy of a system that they have limited understanding of, and they are relying on overworked NCOs and junior officers to advocate for them. Providing them with more avenues to advocate for themselves and gain agency may be one way of mitigating the spiraling actions that could lead to attrition.

Further Explore the Link Between Attrition and Reenlistment

Given that units with low rates of first-term attrition are associated with higher rates of reenlistment, it would be useful to understand whether the same soldiers being spared from attrition in their first term are also choosing to reenlist for a second term. From the Army's financial point of view, this would turn a loss not simply into a breakeven but rather into a win. By learning as much as we can about soldiers who nearly attrited, particularly those who stayed for a second term, we may understand whom the Army should prioritize keeping in the ranks.

Descriptive Statistics of the Full and Matched Sample

Table A.1
Summary Statistics of Individual and Enlistment Factors for Full Sample and Matched Subsample

Variable	Full Sample (Chapter Three), <i>N</i> = 849,148		All Soldiers Assigned to First Unit (serve 7 months or more), <i>N</i> = 742,439		Matched Subsample (Chapter Four), <i>N</i> = 165,032	
	Mean (A)	Standard Deviation (B)	Mean (C)	Standard Deviation (D)	Mean (E)	Standard Deviation (F)
Female	0.165	0.37	0.157	0.364	0.040	0.195
Age at accession	21.600	4.280	21.600	4.200	21.600	3.340
Prior service	0.018	0.134	0.018	0.134	0.012	0.107
U.S. citizen	0.959	0.197	0.958	0.200	0.958	0.200
Marital status at accession						
Single, never married	0.819	0.385	0.821	0.383	0.862	0.345
Married	0.165	0.372	0.163	0.370	0.127	0.333
Divorced	0.014	0.116	0.013	0.114	0.010	0.101
Other	0.002	0.046	0.002	0.045	0.000	—
Marital status at time of first assignment						
Single, never married	—	—	0.790	0.408	0.816	0.388
Married	—	—	0.196	0.397	0.174	0.379
Divorced	—	—	0.012	0.111	0.010	0.100
Other	—	—	0.002	0.042	0.000	-
Number of dependents at accession						
None	0.804	0.397	0.806	0.396	0.845	0.362
One dependent	0.094	0.292	0.093	0.291	0.077	0.266

Table A.1—Continued

Variable	Full Sample (Chapter Three), <i>N</i> = 849,148		All Soldiers Assigned to First Unit (serve 7 months or more), <i>N</i> = 742,439		Matched Subsample (Chapter Four), <i>N</i> = 165,032	
	Mean (A)	Standard Deviation (B)	Mean (C)	Standard Deviation (D)	Mean (E)	Standard Deviation (F)
Two dependents	0.058	0.234	0.057	0.232	0.047	0.212
Three dependents	0.033	0.180	0.033	0.178	0.024	0.153
Four or more dependents	0.011	0.103	0.011	0.102	0.007	0.076
Number of dependents at time of first assignment						
None	—	—	0.753	0.432	0.776	0.417
One or more	—	—	0.247	0.432	0.224	0.417
Highest degree attained						
Less than high school/GED	0.012	0.107	0.012	0.108	0.012	0.109
High school diploma	0.905	0.293	0.904	0.294	0.914	0.281
GED or test-based diploma	0.007	0.083	0.007	0.081	0.026	0.142
Some college, associate's, or certification	0.020	0.140	0.02	0.14	0.021	0.144
College	0.052	0.222	0.053	0.224	0.035	0.172
Postgraduate	0.004	0.065	0.004	0.065	0.002	0.039
Race/ethnicity						
Asian	0.044	0.204	0.045	0.206	0.040	0.195
White	0.651	0.477	0.645	0.478	0.707	0.454
Hispanic	0.122	0.327	0.124	0.330	0.122	0.328
Black	0.172	0.377	0.174	0.379	0.117	0.321
American Indian	0.010	0.100	0.010	0.100	0.011	0.103
Unknown	0.002	0.046	0.002	0.045	0.002	0.039
AFQT category						
AFQT Category I	0.061	0.238	0.061	0.240	0.053	0.224
AFQT Category II	0.335	0.472	0.335	0.472	0.345	0.475
AFQT Category IIIA	0.259	0.438	0.257	0.437	0.265	0.441
AFQT Category IIIB	0.328	0.470	0.329	0.470	0.320	0.466

Table A.1—Continued

Variable	Full Sample (Chapter Three), <i>N</i> = 849,148		All Soldiers Assigned to First Unit (serve 7 months or more), <i>N</i> = 742,439		Matched Subsample (Chapter Four), <i>N</i> = 165,032	
	Mean (A)	Standard Deviation (B)	Mean (C)	Standard Deviation (D)	Mean (E)	Standard Deviation (F)
AFQT Category IV	0.017	0.127	0.017	0.130	0.017	0.130
Received bonus	0.447	0.497	0.464	0.499	0.524	0.499
Bonus amount if >0	\$10,811	\$8,802	\$10,871	\$8,831	\$10,832	\$8,640
Contract length						
1 or 2 years	0.014	0.119	0.015	0.121	0.016	0.124
3 or 4 years	0.791	0.406	0.800	0.400	0.845	0.362
5 or 6 years	0.194	0.396	0.185	0.388	0.139	0.346
Pay grade at accession						
E1	0.480	0.500	0.469	0.499	0.477	0.499
E2	0.257	0.437	0.262	0.439	0.281	0.450
E3	0.197	0.398	0.204	0.403	0.207	0.405
E4 or higher	0.066	0.249	0.066	0.247	0.035	0.183
Pay grade at time of first assignment						
E1	—	—	0.038	0.192	0.233	0.423
E2	—	—	0.677	0.468	0.472	0.499
E3	—	—	0.221	0.415	0.259	0.438
E4 or higher	—	—	0.064	0.245	0.036	0.185
CMF						
Combat	0.369	0.482	0.370	0.483	0.697	0.459
Medical	0.115	0.320	0.117	0.321	0.064	0.245
Information operations	0.057	0.232	0.056	0.231	0.027	0.162
Supply and maintenance	0.186	0.389	0.188	0.391	0.083	0.276
Administrative and legal	0.026	0.159	0.026	0.158	0.011	0.106
Other	0.247	0.431	0.243	0.429	0.117	0.321
Unemployment rate in home state						
Less than 5 percent	0.211	0.408	0.217	0.412	N/A	N/A

Table A.1—Continued

Variable	Full Sample (Chapter Three), <i>N</i> = 849,148		All Soldiers Assigned to First Unit (serve 7 months or more), <i>N</i> = 742,439		Matched Subsample (Chapter Four), <i>N</i> = 165,032	
	Mean (A)	Standard Deviation (B)	Mean (C)	Standard Deviation (D)	Mean (E)	Standard Deviation (F)
5 to 7 percent	0.531	0.499	0.517	0.500	N/A	N/A
8 percent or more	0.258	0.438	0.266	0.442	N/A	N/A
BCT location						
Fort Benning	0.286	0.452	0.284	0.451	N/A	N/A
Fort Jackson	0.326	0.469	0.324	0.468	N/A	N/A
Fort Knox	0.083	0.276	0.088	0.283	N/A	N/A
Fort Leonard Wood	0.167	0.373	0.167	0.373	N/A	N/A
Fort Sill	0.129	0.335	0.128	0.334	N/A	N/A
Other	0.009	0.095	0.009	0.096	N/A	N/A
First-term outcomes						
BCT attrition (first two months)	0.026	0.160	N/A	N/A	N/A	N/A
Early attrition (first 6 months)	0.097	0.295	N/A	N/A	N/A	N/A
First-term attrition	0.295	0.456	0.221	0.415	N/A	N/A
Attrition after 7 months	0.202	0.402	0.203	0.402	0.168	0.374
Reenlistment	0.363	0.481	0.403	0.49	0.402	0.490
Separation due to disability, MIA, or KIA	0.069	0.254	0.076	0.264	0.069	0.254

SOURCE: RAND Arroyo Center calculations using TAPDB-AE data for soldiers enlisting in fiscal year 2002 through fiscal year 2013.

NOTES: Characteristics are measured at the time of accession for the full sample and at the time of assignment to first unit for the matched subsample. Exceptions are the first-term outcomes, which are measured as of the end of the first term. — = the information cannot be measured in the sample (e.g., because some soldiers left before first assignment); N/A = not applicable (not used in matched sample analysis).

Full Regression Results for Descriptive Analysis

Table B.1 provides the odds ratios associated with the full set of covariates in our model including the model fit statistics. The predicted attrition rates are plotted in Figures B.1 to B.9.

Table B.1
Odds Ratios from Regressions of Attrition, by Type, for Full Set of Covariates

	(1) BCT Attrition (1–3 months)	(2) Early Attrition (1–6 months)	(3) First-Term Attrition
Pseudo R2	0.040	0.040	0.041
Log-likelihood	–87,755.8	–231,800.5	–442,029.5
Chi ²	7,398.8	19,319.6	38,208.1
Observations	759,595	759,595	759,595
Age			
21–25	1.005 (0.31)	0.979* (–2.27)	0.849*** (–27.52)
26–50	1.142*** (4.83)	1.153*** (9.39)	0.795*** (–22.13)
Gender			
Female	1.925*** (34.52)	2.267*** (73.75)	2.114*** (99.65)
Education			
Less than high school/ GED	0.872 (–1.89)	1.049 (1.31)	1.516*** (18.20)
GED or test-based diploma	1.187* (2.26)	1.164*** (3.63)	1.088** (2.86)
Some college, associate's, or certification	0.934 (–1.11)	0.965 (–1.07)	0.844*** (–7.72)

Table B.1—Continued

	(1) BCT Attrition (1–3 months)	(2) Early Attrition (1–6 months)	(3) First-Term Attrition
College	1.036 (0.36)	0.896* (–2.04)	0.793*** (–6.88)
Postgraduate	0.923 (–0.45)	0.973 (–0.29)	0.956 (–0.74)
Race/ethnicity			
Asian	0.477*** (–14.78)	0.578*** (–21.96)	0.620*** (–30.94)
Hispanic	0.544*** (–23.03)	0.598*** (–37.12)	0.693*** (–42.68)
Black	0.566*** (–25.66)	0.658*** (–35.16)	0.898*** (–14.46)
American Indian	0.756*** (–3.94)	0.809*** (–5.55)	1.037 (1.46)
Unknown	0.780 (–0.84)	0.733 (–1.81)	0.906 (–0.85)
Marital status			
Married	1.231*** (4.67)	1.104*** (4.00)	0.887*** (–7.19)
Divorced	1.368*** (5.49)	1.278*** (7.48)	1.142*** (5.62)
Other	1.179 (1.27)	1.235** (2.82)	1.220*** (3.69)
Number of dependents			
One dependent	1.100* (2.29)	1.082*** (3.46)	1.168*** (10.24)
Two dependents	1.179*** (3.30)	1.099*** (3.37)	1.200*** (9.60)
Three dependents	1.169** (2.73)	1.141*** (4.07)	1.218*** (8.85)
Four or more dependents	1.192* (2.26)	1.094* (1.98)	1.107** (3.20)
AFQT category			

Table B.1–Continued

	(1) BCT Attrition (1–3 months)	(2) Early Attrition (1–6 months)	(3) First-Term Attrition
AFQT Category II	1.318*** (6.63)	1.277*** (11.05)	1.317*** (19.87)
AFQT Category IIIA	1.549*** (10.28)	1.493*** (17.70)	1.571*** (31.80)
AFQT Category IIIB	1.629*** (11.34)	1.587*** (20.20)	1.538*** (29.90)
AFQT Category IV	1.451*** (4.68)	1.591*** (11.72)	1.351*** (11.91)
Contract term			
3 or 4 years	1.011 (0.15)	1.032 (0.82)	1.559*** (16.43)
5 or 6 years	1.085 (1.10)	1.134** (3.22)	2.234*** (29.16)
Received enlistment bonus			
Received bonus	0.934*** (–3.76)	0.906*** (–10.04)	0.925*** (–12.16)
CMF			
Medical	0.856*** (–5.47)	0.771*** (–16.82)	0.897*** (–11.06)
Information operations	0.910* (–2.55)	0.783*** (–12.27)	1.018 (1.42)
Supply and maintenance	0.921** (–3.23)	0.789*** (–16.96)	0.967*** (–3.71)
Administrative and legal	0.885* (–2.50)	0.805*** (–7.91)	0.944** (–3.20)
Other	0.898*** (–4.66)	0.813*** (–16.52)	0.939*** (–7.69)
Entry pay grade			
E2	0.717*** (–18.43)	0.711*** (–35.06)	0.712*** (–54.26)
E3	0.605*** (–22.45)	0.592*** (–43.53)	0.571*** (–73.70)

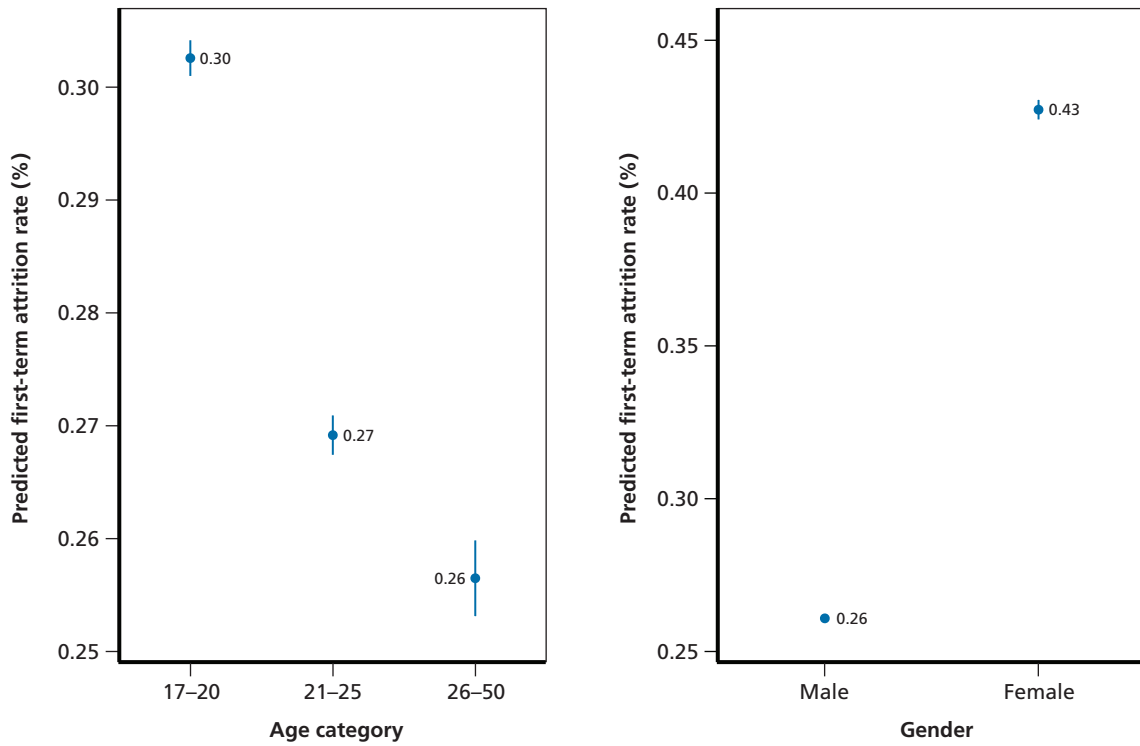
Table B.1—Continued

	(1) BCT Attrition (1–3 months)	(2) Early Attrition (1–6 months)	(3) First-Term Attrition
E4 or higher	0.440*** (–8.88)	0.445*** (–16.14)	0.426*** (–27.34)
Unemployment rate in home state			
5 to 7 percent	0.969 (–1.39)	0.971* (–2.41)	0.983* (–2.14)
8 percent or more	0.819*** (–6.17)	0.872*** (–7.75)	0.909*** (–8.25)
BCT location			
Fort Jackson	1.313*** (11.02)	0.800*** (–16.85)	0.939*** (–7.44)
Fort Knox	0.518*** (–16.14)	0.646*** (–25.36)	0.842*** (–16.15)
Fort Leonard Wood	1.250*** (8.58)	0.859*** (–10.98)	0.930*** (–7.90)
Fort Sill	1.422*** (14.24)	0.780*** (–17.86)	0.952*** (–5.41)
Other	0.235*** (–6.40)	0.386*** (–11.97)	0.961 (–1.08)
Cohort-year indicators	Yes (–1.64)	Yes (3.10)	Yes (11.91)

SOURCE: RAND Arroyo Center calculations from TAPDB-AE data.

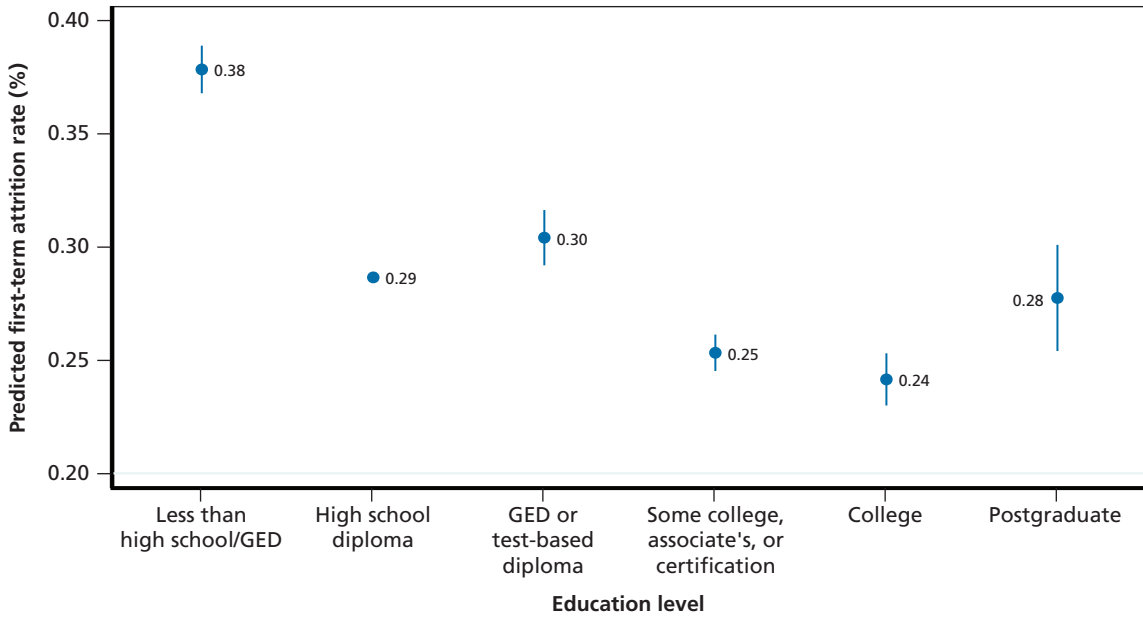
NOTES: t-statistics are in parentheses. Regressions additionally include indicator variables for year of enlistment. For categorical variables, omitted categories are as follows: less than 21 years old; high school diploma; white; single, never married; no dependents; AFQT Category I; less than three-year contract; combat CMF; pay grade E1; less than 5 percent unemployment rate; less than 6 percent officers at installation; and less than 15,000 soldiers at installation. Asterisks denote statistical significance: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Figure B.1
Predicted First-Term Attrition Rates, by Age Category and Gender



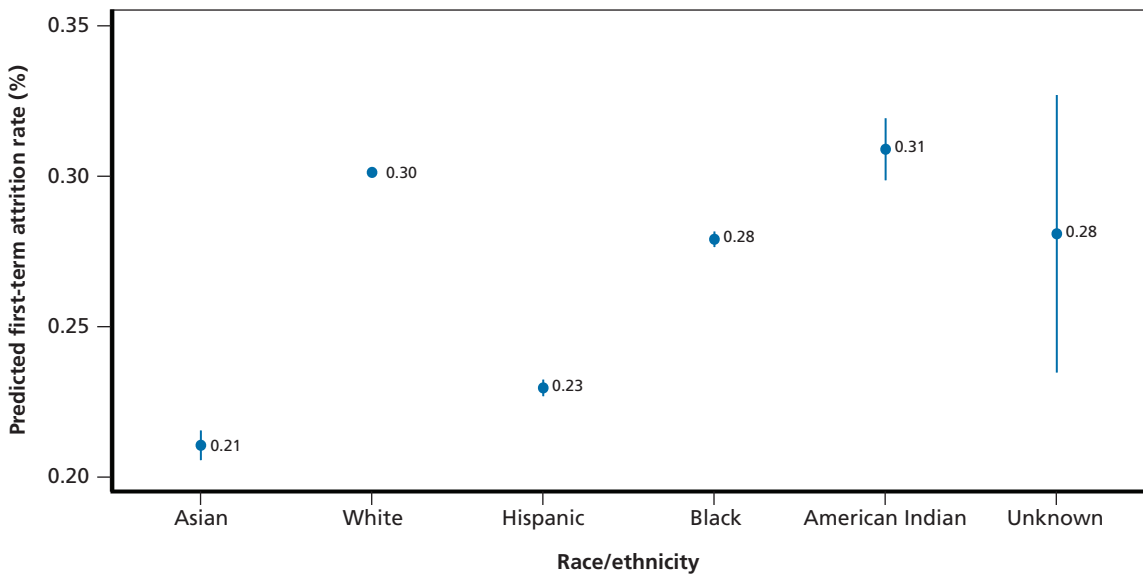
SOURCE: RAND Arroyo Center calculations from TAPDB-AE data.
 NOTE: Vertical bars show 95 percent confidence intervals.

Figure B.2
Predicted First-Term Attrition Rates, by Education Level



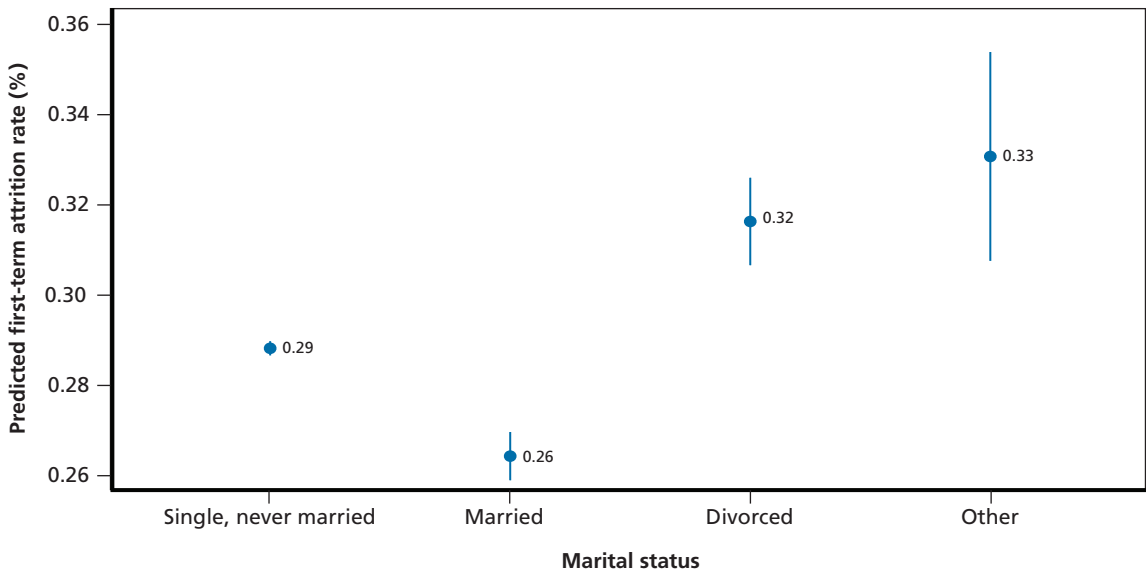
SOURCE: RAND Arroyo Center calculations from TAPDB-AE data.
 NOTE: Vertical bars show 95 percent confidence intervals.

Figure B.3
Predicted First-Term Attrition Rates, by Race/Ethnicity



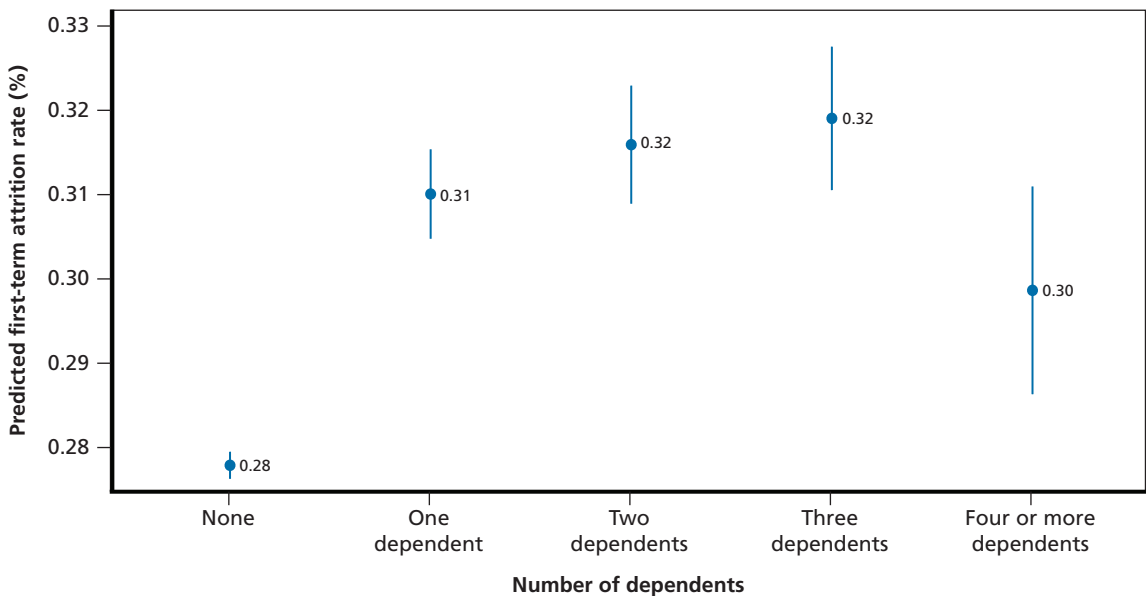
SOURCE: RAND Arroyo Center calculations from TAPDB-AE data.
 NOTE: Vertical bars show 95 percent confidence intervals.

Figure B.4
Predicted First-Term Attrition Rates, by Marital Status



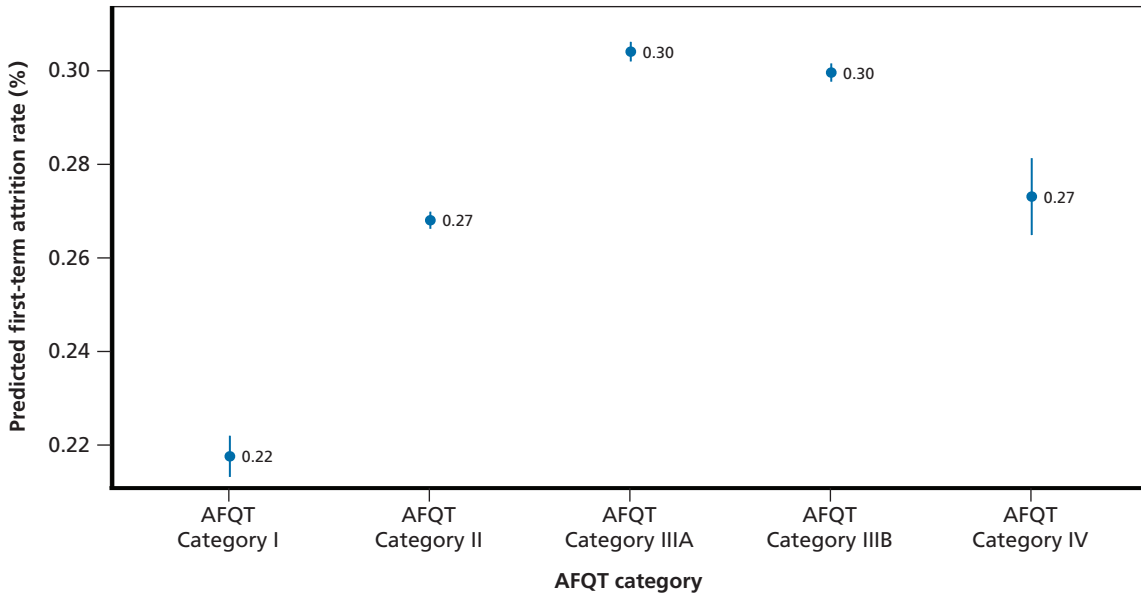
SOURCE: RAND Arroyo Center calculations from TAPDB-AE data.
 NOTE: Vertical bars show 95 percent confidence intervals.

Figure B.5
Predicted First-Term Attrition Rates, by Number of Dependents



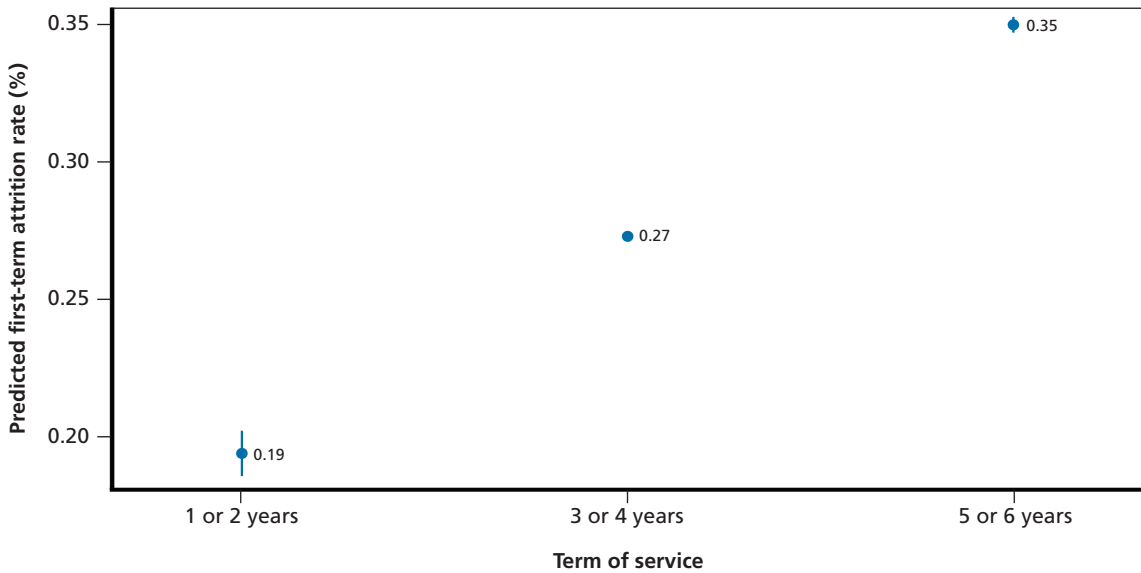
SOURCE: RAND Arroyo Center calculations from TAPDB-AE data.
 NOTE: Vertical bars show 95 percent confidence intervals.

Figure B.6
Predicted First-Term Attrition Rates, by AFQT



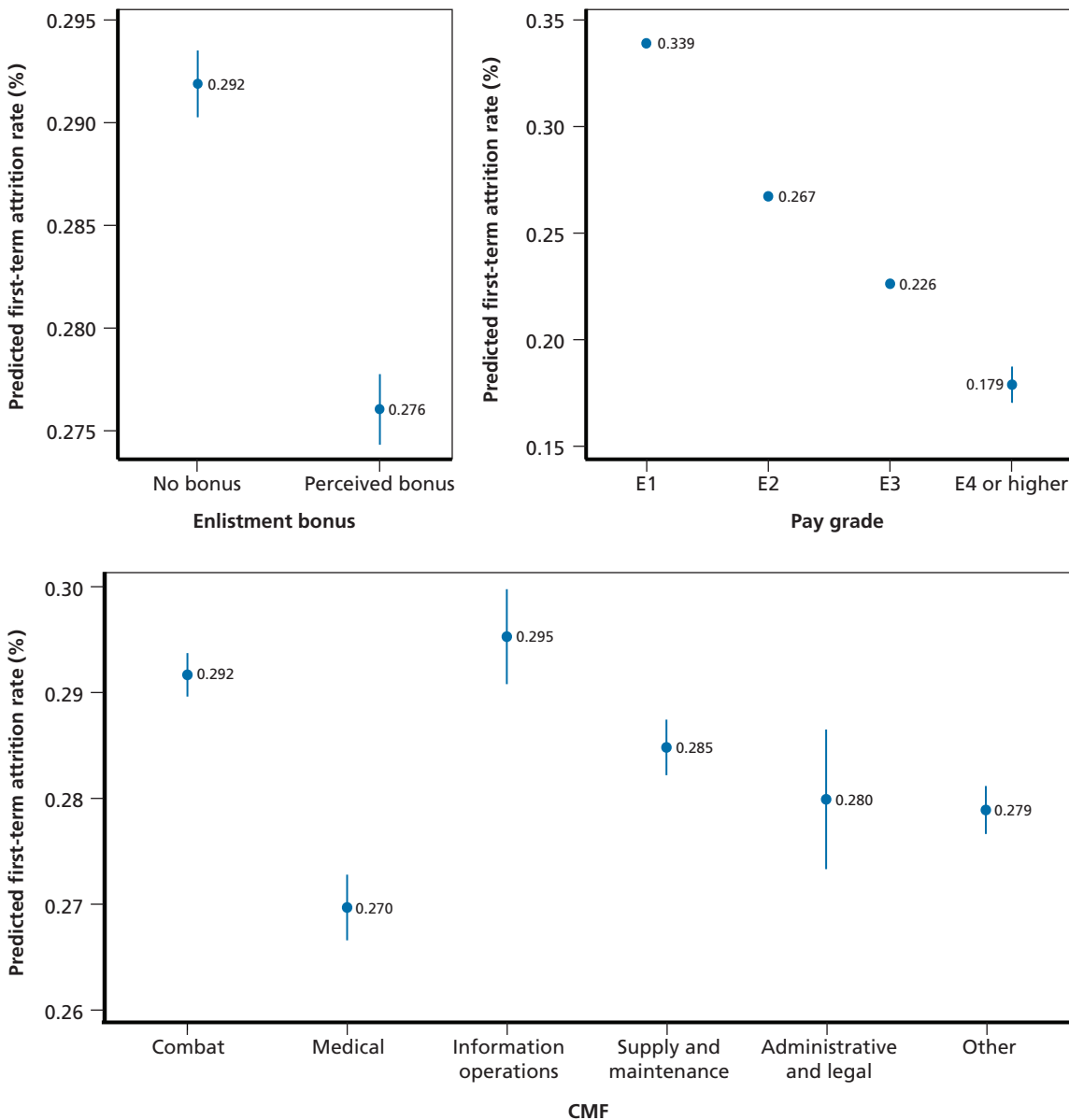
SOURCE: RAND Arroyo Center calculations from TAPDB-AE data.
NOTE: Vertical bars show 95 percent confidence intervals.

Figure B.7
Predicted First-Term Attrition Rates, by Terms of Service



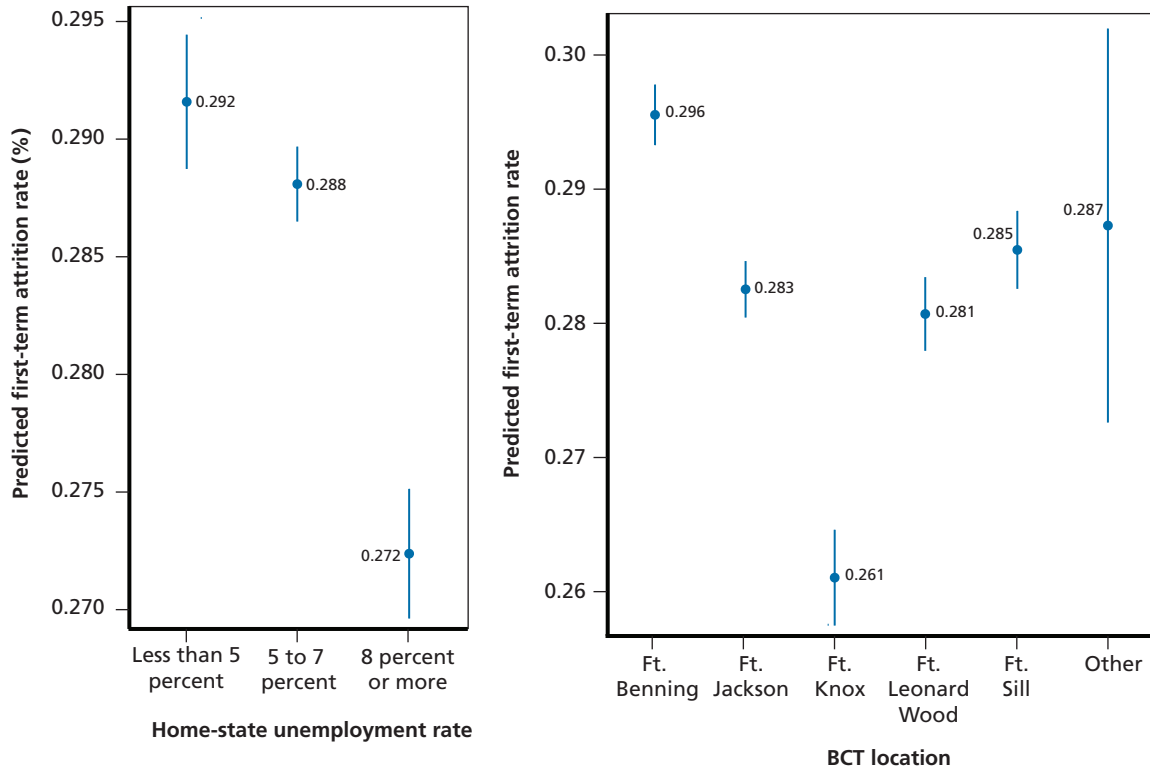
SOURCE: RAND Arroyo Center calculations from TAPDB-AE data.
NOTE: Vertical bars show 95 percent confidence intervals.

Figure B.8
Predicted First-Term Attrition Rates by Enlistment Bonus, Career Management, and Pay Grade



SOURCE: RAND Arroyo Center calculations from TAPDB-AE data.
 NOTE: Vertical bars show 95 percent confidence intervals.

Figure B.9
Predicted First-Term Attrition Rates, by Home-State Unemployment Rate and BCT Location



SOURCE: RAND Arroyo Center calculations from TAPDB-AE data.
 NOTE: Vertical bars show 95 percent confidence intervals.

Technical Details for Matched Sample Analysis

For the causal analysis based on random assignment to the first unit, the main regression specification identified fixed effects of a soldier's first battalion and NCO, as in equation 1:

$$Y_i = \alpha + \beta_n (\text{battalion/NCO})_{in} + \delta_j \text{cohort}_{ij} + \gamma \cdot \mathbf{X}_i + \epsilon_i \quad (1)$$

In the equation, individual junior enlisted soldiers are denoted i . We ran three different analyses, for which the variable Y_i indicates failure to adapt; separation due to disability, MIA, or KIA; or reenlistment. The coefficient of interest is β_n , which captures the effect of being first assigned to battalion-NCO pair number n . The other variables absorb the average outcome among soldiers in cohort j (where *cohort* means a combination of MOS, enlistment year, and installation) and with personal characteristics \mathbf{X}_i . The characteristics included in the vector \mathbf{X} are those given in Table A.1.

Because of collinearity, the regression drops an arbitrary battalion-NCO pair at each installation and treats it as the comparison group. We adopted the method in equation 2 of the article by Lacetera and coauthors to transform the coefficients into a more intuitive specification.¹ Treating β_1 as the coefficient for the omitted battalion-NCO pair (so $\beta_1 = 0$), we normalized the estimated coefficients as in equation 2:

$$\hat{\beta}_{\text{norm}, n} = \begin{cases} \hat{\beta}_n - \frac{1}{N} \sum_{j=1}^N \hat{\beta}_j, & n > 1 \\ -\frac{1}{N} \sum_{j=1}^N \hat{\beta}_j, & n = 1 \end{cases} \quad (2)$$

When displaying results, the coefficients are not plotted in the order of the original numbering, 1, 2, . . . N (which is arbitrary), but rather in the order of their magnitude.

Because of the large number of dummy variables, a nonlinear regression model such as logit or probit is not feasible. Instead, we run an LPM, essentially an ordinary least squares regression with a binary outcome variable. The interpretation of the coefficients is the same as for a marginal effect in a logit or probit: the increase or decrease in probability (percentage points) of the outcome when a soldier is assigned to that particular battalion and senior NCO.

The LPM will yield similar results as a marginal effect from a logit or probit, so long as the majority of predicted values are between 0 and 1. In the main regression for failure to adapt (shown in Figure 4.3), 95 percent of the predicted values fall in this range. The LPM will not fit well in the tails, where predicted values may fall outside this range. This is why the tails of

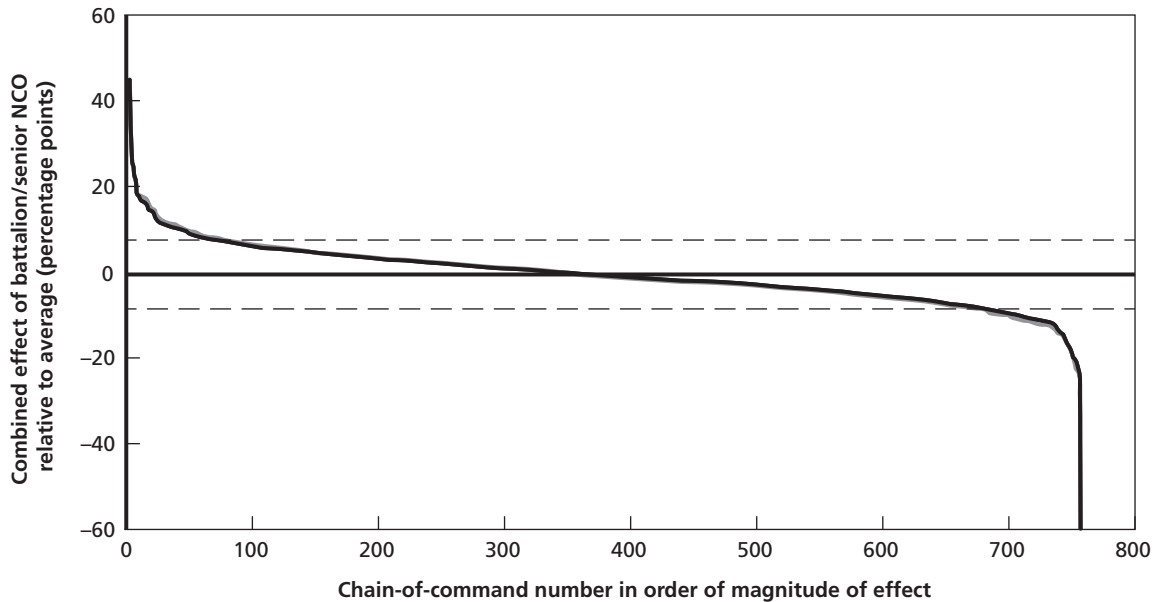
¹ Lacetera et al., 2016.

the graphs show steeper slopes. Since the tails are less likely to be fit well, we excluded them in our discussion (e.g., we compared the 10th and 90th percentiles, rather than the 1st and 99th).

A further concern is random assignment. It is difficult to test random assignment directly. Our discussion pointed to U.S. Department of Defense policy, as well as several prior studies to support the notion that junior enlisted soldiers' first battalion assignment is random, conditional on MOS, year, and installation. We also included individual-level demographic characteristics in our regressions, in case those characteristics are actually taken into account when making assignments.

One test to confirm that the random-assignment assumption is valid is to compare results with and without various control variables. Figure C.1 shows the results, analogous to Figure 4.3, for three distinct sets of controls. The black line is the same as in Figure 4.3, showing the results for the full set of control variables: battalion-NCO dummies plus cohort dummies plus individual characteristics. The gray line shows the effects if the individual characteristics are excluded. The line is slightly steeper, since the individual characteristics soak up some of the variation between battalion-NCO pairs.² But, overall, the two lines nearly overlap. We are including all variables available in TAPDB-AE at the time of assignment, which reflects what the Army would know about each person and therefore what could be used to inform assignment. The close overlap of the two lines supports the assumption that our cohort dummies account for the correct set of random-assignment variables, since the inclusion of soldiers' demographics does not add much explanatory power beyond these cohort dummies.

Figure C.1
Normalized Battalion–Senior NCO Effects on Failure to Adapt, for Different Sets of Control Variables



SOURCE: RAND Arroyo Center calculations from TAPDB-AE data ($N = 757$).

NOTES: The figure shows a limited vertical axis (compared with Figure 4.3) to allow for visualization of the differences between the black and gray lines. Black dashed lines show 10th (–7.9) and 90th (+8.1) percentiles for the sample with demographic controls.

² Another way to see the increased variation is to note that the standard deviation, excluding demographic controls, is 7.9, as opposed to 7.6 with the controls.

Additional Results from Quantitative Analyses

This appendix examines further relationships between first-term outcomes and soldiers' first assigned battalion and NCO, including the effects on other types of early separation and the relationship between battalion-level effects and senior NCO characteristics.

Battalion and Senior NCO Characteristics

Table D.1 shows the average characteristics for the battalion-NCO pairs in our matched subsample, including junior enlisted outcomes and senior NCO characteristics.

Table D.1
Characteristics of Battalion-NCO Pairs

	Average	Standard Deviation	Range
Number of matched junior enlisted	226.8	118.8	100–790
Failure-to-adapt rate of junior enlisted	0.17	0.06	0.04–0.76
Reenlistment rate of junior enlisted	0.40	0.08	0.19–0.67
Disabled, MIA, and KIA rate of junior enlisted	0.07	0.03	0–0.33
Junior enlisted months spent with battalion and NCO	11.5	8.99	1–44
Months spent if failed to adapt	8.84	3.60	1–23
Months spent if reenlisted	11.8	5.96	1–31
Months spent if became disabled, MIA, or KIA	10.3	4.90	1–27
Senior NCO AFQT percentile	53.8	20.8	9–99
Senior NCO is female	0.01	0.10	0–1
Senior NCO in pay grade E9	0.98	0.15	0–1
Senior NCO years of service	24.8	3.04	14–34
Senior NCO time in grade (months)	35.7	20.8	1–122
Senior NCO time to E6 (months)	89.1	25.0	52–145
Senior NCO time to E6 (percentile by enlistment year and CMF)	13.8	12.1	1–48

SOURCE: RAND Arroyo Center calculations using TAPDB-AE data.

NOTES: There are 757 senior NCO/battalion combinations made up of 718 unique NCOs and 298 unique battalions. Averages of battalion-level first-term outcomes differ slightly from individual-level averages because of the uneven distribution of these outcomes across battalions.

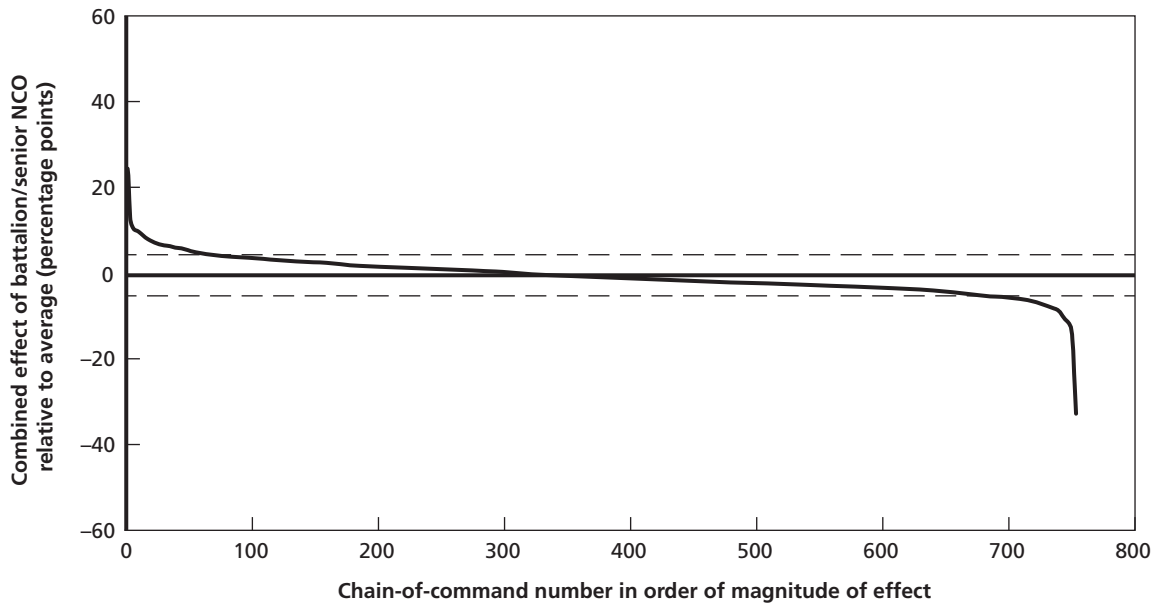
We examined effects on early separation due to disability, MIA, or KIA. We would expect battalions and NCOs to have less influence over these types of separations, because they are the result of training or deployment that most battalions would have to experience over the course of our observation window. However, we would not necessarily expect zero effect, because units have some discretion over the reason they provide for soldier separation and also because some battalions will deploy while others do not, will deploy for longer, or deploy in more-hazardous regions. Thus, we would to see expect differences across units, but the variation should be lower than for failure to adapt or reenlistment.

Figure D.1 shows the battalion-NCO effects for separation due to disability, MIA, and KIA. As predicted, the effects are muted, compared with Figures 4.3 and 4.6. The difference between 10th and 90th percentiles is 8.8 percentage points, and the standard deviation is 4.2.

If disability, MIA, and KIA are indeed caused by events over which the unit and its leader have little control, then we would expect a weak correlation between battalion-NCO effects on disability versus on failure to adapt. In other words, a unit and its leader may have more systematic control over whether a soldier successfully integrates into the unit than on whether the soldier gets injured. But, again, the correlation might not be zero if, for example, high rates of disability are correlated with negative morale and therefore higher probabilities of failing to adapt.

Figure D.2 shows each battalion-NCO pair's effect on disability, MIA, and KIA versus its effect on failure to adapt, analogous to Figure 4.11. The slope of the linear trend (the dotted line) is -0.06 .¹ This is a weaker relationship than the correlation in Figure 4.9. Interpreted analogously, it would imply that for every 17 soldiers who are "saved" from failing to adapt, there is a net increase in one soldier who separates due to disability, MIA, or KIA.

Figure D.1
Normalized Battalion–Senior NCO Effects on Disability, MIA, and KIA

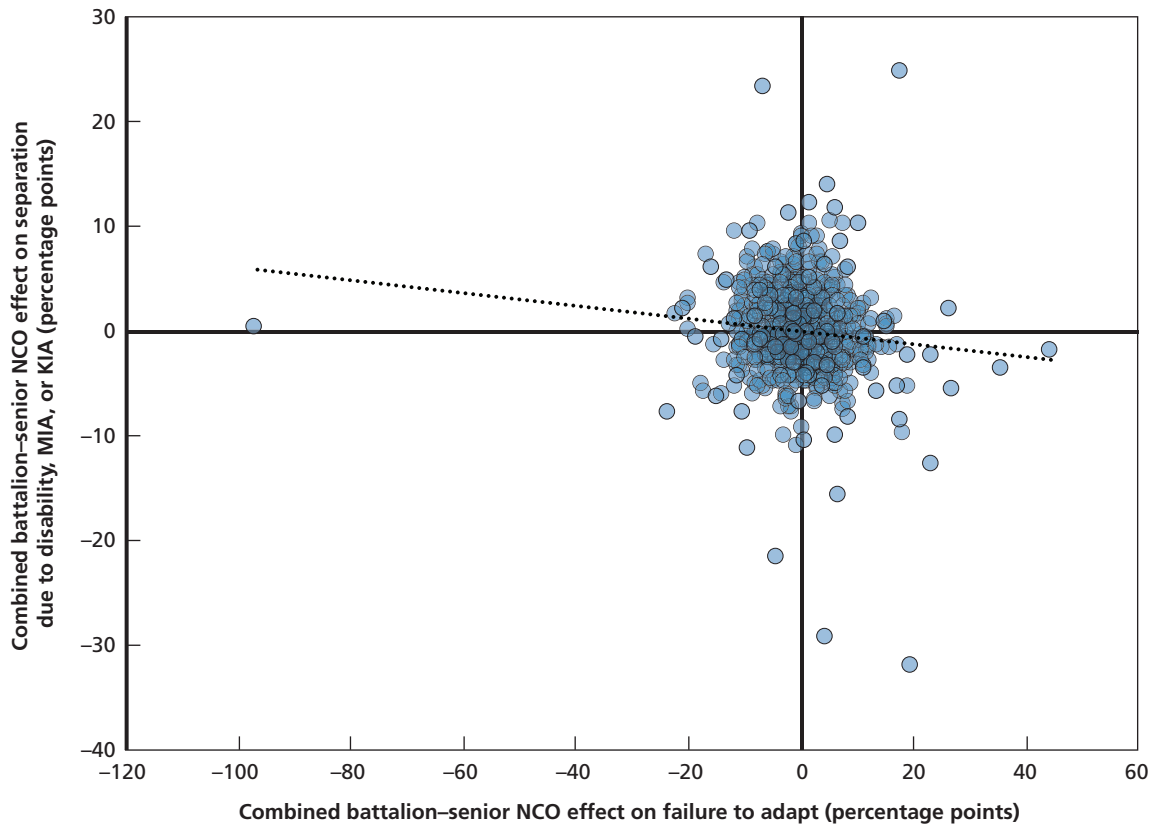


SOURCE: RAND Arroyo Center calculations from TAPDB-AE data.

NOTES: Dashed lines show the 10th and 90th percentiles. 10th percentile = +4.8; 90th percentile = -4.5.

¹ After removing the outlier on the horizontal axis, the slope is -0.075 .

Figure D.2
Normalized Battalion–Senior NCO Effects on Disability, MIA, and KIA Versus Failure to Adapt



SOURCE: RAND Arroyo Center calculations from TAPDB-AE data.

NOTES: Each dot represents a battalion–NCO pair. The dashed line shows the linear trend; slope = -0.06 .

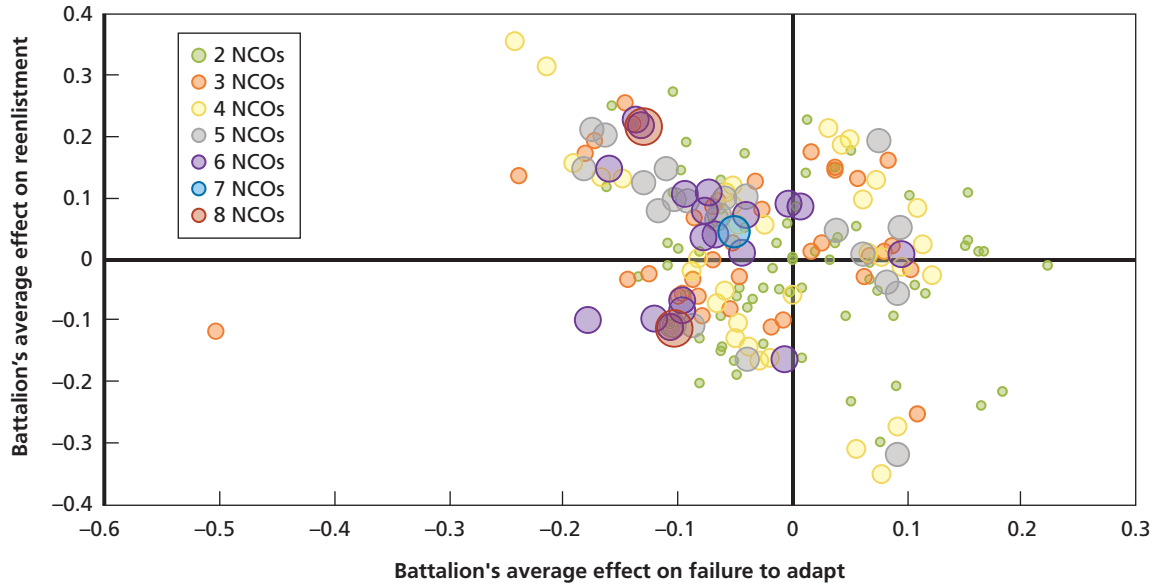
Evidence for the Role of Senior Enlisted Leaders

To observe whether a battalion's effect on failure to adapt depends on its NCO, we used the 187 battalions for which we observed at least two different senior NCOs. In the analyses already described, each different NCO–battalion combination was considered separately. We could therefore compare the effects (plotted in Figures 4.9 and 4.12) attributed to a given battalion under different NCOs.

We were able to observe between two and eight unique NCOs leading each of the 187 battalions, for a total of 646 combinations. We took the average effect on failure to adapt and reenlistment for all chains of command associated with the same battalion, giving a battalion-level average effect. Figure D.3 shows the average effect for failure to adapt versus reenlistment, analogous to Figure 4.12. The width and color of each circle correspond to the number of NCOs who led the battalion.

The figure shows that effects on first-term outcomes do not always average out across different senior NCOs. Even battalions with many NCOs (the largest circles in Figure D.3) sometimes have averages that are quite far from zero. In addition, there is a clear negative cor-

Figure D.3
Battalion-Level Average Effects on Failure to Adapt Versus Reenlistment Across Multiple Senior NCOs



SOURCE: RAND Arroyo Center calculations from TAPDB-AE data ($N = 646$ battalion-NCO combinations associated with 187 unique battalions).

NOTES: Widths of circles correspond to the number of NCOs who led the corresponding battalion. The weighted correlation is -0.28 .

relation between a battalion's average effect on failure to adapt and its average effect on reenlistment over multiple NCOs.²

We are drawing broad conclusions from visual patterns, but it appears that battalions have persistent effects on first-term outcomes even across multiple senior NCOs. Some battalions appear to have consistently positive effects, while others are consistently negative, with magnitudes of several percentage points. This strongly suggests that much of the combined senior NCO-battalion effect on first-term outcomes is attributable to something other than the senior enlisted leader. Further research would be required to uncover the characteristics that distinguish battalions with positive versus negative effects.

² The correlation of -0.28 increases to -0.33 after dropping the outlier battalion with an average failure to adapt effect of approximately 0.5.

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The U.S. Army invests significant resources in recruiting, training, and preparing new soldiers. When a soldier does not complete a full contract term, the Army views this as a net loss. The goal of the research summarized in this report is to determine whether organizational factors matter for producing attrition and to generate hypotheses regarding the mechanisms by which organizational factors generate attrition. The authors made use of the random assignment of soldiers to their first battalion to determine whether the “luck of the draw”—the battalion to which the soldier is assigned and the senior noncommissioned officer (NCO) at that battalion—is directly linked to the observed variation across assignments in eventual first-term outcomes. The authors complemented that analysis with interviews exploring the factors that could be driving differences across units, such as leadership and command culture, availability of soldier supports, management of deployment and training cycles, and installation amenities.

The quantitative part of the report shows that organizational factors affect attrition above and beyond the effects of soldier characteristics. The qualitative part highlights potential pathways through which battalion-level characteristics might manifest in differential attrition outcomes.

Rather than conceptualizing attrition as a soldier being “fired” for poor performance, this report describes attrition as a process in which leadership may fail to provide needed interventions or to perpetuate a culture in which soldiers want to and are able to remain in service. The authors identify opportunities to address the factors under the Army’s control that are associated with attrition.

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