Finding and Keeping Stars:

The Leadership Performance and Retention of High-Potentials

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Abstract

High potentials (HI-POs) are employees who are most likely to become their organizations' top performers and senior leaders. Identifying HI-POs early and understanding the factors involved in their retention can help organizations strategically invest in their future. This dissertation explores how to identify and retain HI-POs across three related chapters (papers), two of which examine U.S. Army officers, and one of which examines corporate leaders.

The first chapter identifies which traits and performance factors predict that young leaders will become their organizations' highest performing leaders. This illuminates the challenges of defining high performance, such as the potential organizational tension between favoring action-oriented employees versus contemplative-oriented employees. It also shows that junior employees' job performance ratings, if force-distributed and repeated over time with different bosses, strongly predicts high leadership performance up to fifteen years later. Additionally, it finds intellectual ability may be punished by organizations, and suggests the construct of the *Criteria-Needs Mismatch* (CNM) as a potential explanation of this phenomenon.

Having identified HI-POs within a larger population of young leaders, the second chapter comprehensively tests the factors that predict their turnover dynamics over short, medium, and long stays in their organization. Also, it explores the concept of *Functional Human Capital*, a subset of Industry Human Capital that suggests employees who are trained in different technical fields within the same organization will experience different levels of portability than employees trained in non-technical fields.

Therefore, *Function Human Capital* may provide an additional lens towards understanding turnover behavior.

The third chapter, co-authored with Boris Groysberg, explores the current applications and best practices for one of the most widely used, yet least understood, methods for understanding turnover: the Exit Interview and Survey (EIS). By studying EIS programs across various industries, geographies, and organizational sizes, we find most existing EIS programs do not produce positive changes for their organizations, and that there is no one-size-fits-all template for creating an effective EIS program. Through integrating the literature, analysis, and global best practices, we present four recommendations for designing EIS programs that are capable of unlocking significant value for their organizations.

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Any shortcomings of this work are entirely my own.

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Chapter 1

Are the "Best & Brightest" West Point Officers Leaving of the US Army?

Part 1 of 2: What Predicts High Leadership Performance?

Chapter Abstract

Using archival data on thirteen West Point graduate cohorts from 1992 to 2004 (N=12,056 officers), I examine whether cognitive ability, academic performance, and job performance, among other related factors, significantly predict West Point graduates (referred to hereafter as “West Pointers”) being promoted early and selected for battalion-level command later in their Army careers. Results indicate that West Pointers who perform better than their average peers well in their cadet subjective job performance evaluations are more likely to receive early promotions and selection for battalion command as Army officers. Similarly, West Pointers who are perform better than their average peers in their undergraduate academics are more likely to be promoted before their peers to the rank of major (the first possible early promotion, at around the ten year mark after graduation). In contrast to the hypothesized impact of cognitive ability, the analysis shows West Pointers who score higher in cognitive ability assessments are less likely to be promoted early or be selected for battalion command, relative to West Pointers who scored lower. Additionally, I find that West Point female “superstars” (e.g., high performers, high cognitive ability scores, and positive performance evaluations) do not experience rewards in the same ways as West Point male superstars. The analysis of the hypotheses was shown to be robust for turnover. Finally, implications, limitations, contributions, and areas of further research are suggested.

Introduction

KnowledgeTech, Inc. is a hypothetical U.S.-headquartered Fortune 500 firm with a significant global footprint. They have an up-or-out, leadership-development orientation for their junior-professional

grade employees, who they hire only after successful completion of an internship program. Five new-hires are represented in Table 1 below.

Table 1: KnowledgeTech's new hires

New Employee Name	College Academic GPA [a]	Internship Rating [a, b]	Combined Rating [c]	Post-Internship *Function* at KnowledgeTech
G. W.	3.70	2.40	3.05	Back Office- Programming
A. A.	3.61	3.53	3.57	Back Office- Programming
C. R.	3.53	3.68	3.60	Back Office- Marketing
G. P.	3.21	3.86	3.54	Operations- Future Concepts
W. A.	3.14	2.24	2.69	Operations- Core Products

[a] On a 0.0 to 4.0 scale, with a 3.3 being the statistical average grade among all new employees, and a 4.0 being perfect.
[b] Internship rating is eleven combined job ratings from the sequence of job internships with this firm while in college.
[c] Combined rating is: 50% Academic GPA and 50% Internship Rating

Since organizations cannot attract and retain employees that are above-average in every desirable trait and performance characteristic, most managers are forced to prioritize which traits and behaviors are most important to their organization. Based on the human-capital snapshot of Table 1, if KnowledgeTech only has the resources to specially develop 20 percent of their new employees (one employee in this case), then who should it be?

Many organizations invest their limited resources into their high-potentials (HI-POs) as they are "the people that companies believe may become their future leaders" (Fernández-Aráoz, Groysberg, & Nohria, 2011, p. 78). This is a similar to what business leaders often refer to as their "best and brightest." Employees considered among an organization's "best and brightest" are by implication the most valuable employees *now*, because they are assumed to be those most likely to become the highest contributors and organizational leaders *in the future*. Therefore, the way KnowledgeTech defines "best and brightest" will become the lens that guides their personnel decisions.

Each of the five employees in Table 1 have, similar to most employees in most organizations, a unique distribution of talents. For example, *academic talent* may be a talent operationalized by their college GPA, *company talent* may be ability operationalized by internship rating, and *overall talent* may be an ability operationalized by combined rating. Additionally, *tastes* may be an indicator of an

employee's desire be in that industry or particular organization, operationalized by how aligned the employee's function preference is with wanting to work in the core of the business.

KnowledgeTech, like almost all competitive organizations, can't attract and retain employees who are perfect in all regards. Given they have the resources to invest in one employee, who should it be? Based on the data in Table 1, and depending upon the possible talent preference lenses (a preference for *academic talent*, *company talent*, or *overall talent*), as well attributions based on differing *tastes*, KnowledgeTech may select a different employee as their "best and brightest."

If KnowledgeTech's leaders began with its end goal in mind, then they could define what performance measures identify their most valuable employees and senior leaders early in the process of selecting an employee for investment. Next, they could conduct rigorous analytics to discover which talents in their new employees most strongly predict future valuable employees and leader outcomes. If KnowledgeTech's most important outcome is future job performance, as measured by promotions, its "best and brightest" employees would be most accurately defined as “those junior employees who have the talent(s) that most strongly predict that later job performance. An organization's ability, or inability, to select and invest in their "best and brightest" junior employees influences its leadership pipeline. Because this definitional choice will influence who is selected for investment and promotion, it affects their organization's performance, and ultimately, their corporate survival. In a few organizations, there is more than corporate survival at stake. Indeed, in some cases, human survival is jeopardized if an organization does not perform at optimal levels; thus, the importance of selecting the correct employees for promotion.

Take, for example, the organization that KnowledgeTech is meant to represent: the U.S. Army at the turn of the 20th Century. The five employees are graduates of West Point's Class of 1909 and their actual cadet performance scores and assigned officer function are listed in Table 2. Of particular note, the employee listed as G.P. from Table 1, the new employee with the highest internship rating, is actually Second Lieutenant George Patton. Patton was later considered by many to have been the Allies' best general officer and most successful field commander of World War II. He notably led the Allied armies

that pushed the Nazis out of Northern Africa, Sicily, France, Belgium, and Germany. Knowing this, we can examine the original problem again, with the U.S. Army as the organization, and performance outcomes added.

Table 2: Five members of West Point's Class of 1909, with future officer performance [a, b]

Newly Commissioned Second Lieutenants	Cadet Academic GPA	Cadet Military Efficiency (cadet job evaluations)	Cadet Combined Ratings	Officer Branch Assignment (*function*)	Highest Rank Achieved (officer performance)
Gilbert Wilkes	3.70	2.40	3.05	Engineers	Colonel
Albert Acher	3.61	3.53	3.57	Engineers	Colonel
Charles Richardson	3.53	3.68	3.60	Artillery	Major
George Patton[1]	3.21	3.86	3.54	Cavalry	4-Star General [c]
William Anderson	3.14	2.24	2.69	Infantry	2nd Lieutenant

[a] Same comments apply as for Table 1.
[b] Sources are (U.S.M.A., 2010) and (U.S.M.A., 1909).
[c] Patton died in a car accident while still on active-duty.

For the purposes of this proposal, I assume that, like KnowledgeTech, the pre-World War I Army only had the resources to put twenty percent of their new employees through a special development program. History doesn't specifically say how the pre-World War I Army defined its "best and brightest," or if it even used that term. If the Army used academic talent to predict its "best and brightest," then it would have invested its limited resources into young officer Wilkes, who showed average performance (measured by *highest rank achieved*). If the Army had used overall talent (the *combined rating* field), then it would have invested in Richardson, who turned out to be a mediocre performer.[2] If the Army used officers' tastes for, or experience in, the function most at the core of its business, then it would have invested in the infantryman, Anderson, who turned out to be a low performer.

Although George Patton did not display a strong talent for academics[3], nor did he end up in the Infantry (the core of the Army enterprise), he did show strong cadet military efficiency (*job talent*).[4] Yet,

[1] Clearly, Patton's academic shortcomings were what kept him from being ranked in the top of his class. Additionally, in the ten years following graduation from West Point, he placed in the top-10 in the Olympics in pentathlon and was a combat hero leading the U.S.'s first tank units into battle in World War I. In the interwar years, he continued to develop the Tank Corps, and rescued three drowning youths in Massachusetts. He chose to stay in the Army past retirement age, and, subsequently, in World War II, Patton commanded armies that pushed the Nazi forces out of North Africa, Sicily, France, and much of Germany.
[2] Beyond Richardson, the next highest in overall talent (combined rating) was Acher.
[3] Originally a member of the West Point Class of 1908, Patton failed freshman mathematics and almost failed French (U.S.M.A., 1905), forcing him to repeat his first year (Axelrod, 2009). In fact, cadets today will tell you the rumor that when Patton's widow

if the resource-constrained Army in-effect used *academic talent*, *combined talent*, or *taste talent* scores or rankings as their definition of "best and brightest," it probably would not have invested in Lieutenant George Patton. This potential for a lack of belief in Patton's potential, which would have corresponded with a lack of investment and development in him while a junior officer, could have resulted in him missing a promotion and not being a senior commander, in his employment being terminated during peace time, or in his voluntarily resigning from the organization in frustration. If any of these cases occurred, world history as we know it could have been dramatically altered.

The sample sizes represented in Table 1 and 2 are too small to make statistically significant predictions of what factors actually predict "the best and brightest" Army officers. Yet the example illustrates the potential negative organizational consequences of using a less analytical approach to defining the "best and brightest." Conversely, an organization that conducts a rigorous analytic process to define its "best and brightest" as the most robust factor(s) that predict(s) performance will see the benefit. Indeed, emerging best practices of companies with effective talent programs include aligning talent programs with corporate strategy (as opposed to adopting cookie-cutter approaches from other organizations) and carefully choosing candidates for HI-PO programs (Fernández-Aráoz et al., 2011). These best practices are enforced by an organization deliberately and specifically defining what "best and brightest" means for them.

Though the consequences of most non-military organizations' decisions do not involve life and death, strategically defining the "best and brightest" is nonetheless important. An organization's definition of "best and brightest" may guide their informal and formal human resource and leadership development policies and practices. This becomes even more salient when considering recent research establishing people's propensity to favor potential over performance thereby giving the former more attention, more salary, and more competitive selections (Tormala, Jia, & Norton, 2012). Since organizations are more

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was asked where she would like his statue to be placed at West Point, she recommended the library, because George *never* spent any time in there while a cadet.

[4] Patton was ranked 2nd out of 103 graduates in "military efficiency," and adjusted easily to the cadet structure. He excelled in his cadet leadership roles, as demonstrated by his selection for two of the top cadet jobs at West Point, the Cadet Sergeant Major as a junior and the Cadet Adjutant as a senior (Axelrod, 2009). Also, he was an outstanding swordsman, horseman, and athlete (Axelrod, 2009).

likely to invest in potential, ensuring to deliberately and accurately define potential becomes an important strategic task. By defining their measure of potential wisely, they may enable a sustainable competitive advantage through talent management.

An organization's ability to identify its highest performing junior managers has tremendous influence on the quality of its future senior leaders. This is particularly valid for organizations with internal labor markets, which are characterized by limited ports of entry into employment and hierarchical job ladders (Doeringer & Piore, 1971). The U.S. Army's Commissioned Officer Corps, which made up 18.5 percent of active-duty Army uniformed personnel (DASD, 2012), is a particularly restrictive internal labor market, where the *only* source of future senior leaders (battalion-level commanders, brigade-level commanders and general officers) are the employees who qualified many years before for accession into the lower rungs of the Army officer career ladder as second lieutenants. This pool of potential future Army senior leaders is further filtered through the years to those individuals the Army has repeatedly selected for lower-level promotions, competitive mid-level promotions, and command selections. Army general officers are often the U.S.'s senior military commanders during times of peacekeeping, deterrence, disaster-relief, and armed conflict. Thus, ensuring that the Army selects its best officers for promotion and command posts is of strategic national importance. This becomes even more salient when considering the massive personnel reductions the U.S. Army is currently undergoing due to sequestration and post-war downsizing (Tan, 2013). For example, the fiscal-year (FY) 2014 U.S. Army major's promotion board selected only 65 percent of eligible captains, which is very low when compared with the U.S. Department of Defense's stated goal of promoting 80 percent (USG, 1980) and the fact that their average between 1996 and 2013 of 88.1 percent (Human_Resources_Command, 2014).

This purpose of this paper is to discover "what" human capital and demographic variables predict which West Pointers will become the highest performing U.S. Army officers. This paper is not designed to explain "why," though unpacking the existing performance literature and rigorously analyzing the data will undoubtedly shed light on deeper questions and the implications thereof.

This paper will focus solely on West Point graduates. Despite the fact West Pointers only make up one quarter of all Army officers, they typically hold a disproportionately high percentage of senior leader (general officer) positions. For example, as of March, 2014, twelve of fourteen U.S. Army four-star generals were West Pointers (US_Army_GOMO, 2014). Even when considering that West Pointers receive more pre-commissioning training than Reserve Officers Training Corps (ROTC) and Officer Candidate School (OCS) (J. T. Reed, 2013), the increased likelihood of a West Pointer rising to senior positions in the Department of Defense is noteworthy.

However, a West Pointer also costs the American taxpayer much more to produce than an officer from either of the other two commissioning sources. A 1990 Congressional Budget Office report estimated a West Point graduate's educational costs were $229,000, as compared to $55,000 for an ROTC officer, and $15,000 for an OCS officer, in 1989 dollars (CBO, 1990). Assuming these costs have risen proportionally to standard rates of inflation, which was a 88.6 percent cumulative inflation from 1989-2013 (CMG, 2013), and assuming a relatively consistent program of instruction at the three commissioning sources, the extrapolated cost estimates in 2013 U.S. dollars would be $430,000 per West Pointer, $103,000 per ROTC officer, and $28,000 per OCS officer.[5] Since West Point officers are disproportionally likely to lead much of the United States' future wars and deterrence efforts, and more expensive to to produce per officer than the Army's other commissioning options, it is important to understanding the factors that predict West Pointers' future performance.

A recent paper examined U.S. Air Force Academy (USAFA) officers and found that cadets' human capital and performance records predicted their later officer performance, measured by a conflated promotion-retention dummy variable called *career success* (Rodriguez, 2009). Studying the USAFA Classes of 1986 to 1994, the study found that cadet academic GPA, cadet military performance score, and being commissioned into a "rated" career field such as a pilot, navigator, air battle manager, or flight surgeon all predicted higher likelihoods of officer *career success*. Additionally, Rodriguez found that

[5] Different methodologies in calculating commissioned total costs estimate will influence different results. For example, the US Army Office of Economic and Manpower Analysis (OEMA) calculated the costs per officer in 2011 to be $287,000 per West Pointers, $156,000 per ROTC officer, and between $189,000 to $273,000 per OCS officer.

being a female or an underrepresented minority, or attending the U.S. Air Force Academy Preparatory School predicted a lower likelihood of career success.

This research paper builds on Rodriguez (2009) by disentangling performance from retention and parsimoniously studying performance alone, and in more detail. Also, it expands the context to the largest military service, the U.S. Army, and sharpens the focus of the study to the highest performing officers. In other words, the previous study indirectly examined what predicts an average performer, but this paper directly examines what predicts becoming the highest-performer. Finally, this paper adds a setting effect, in that the officers from the time period studied (West Point Classes of 1992 to 2004) experienced the military primarily during the high deployment period of 1996-current[6], as opposed to Rodriguez's officers, who experienced the military during a comparatively less active period of American military activity.

This paper is organized as follows. It begins by unpacking how the scholarly literature and business press understand the term "best and brightest." Next, using the performance literature as a foundation, I establish six hypotheses about what factors likely predict high-performance. I then provide needed context by briefly explaining the U.S. Army officer promotion system and describing the data. Finally, data is analyzed in regards to the six hypotheses, presented, and the findings discussed; including their implications, limitations, and contributions, as well as potential areas for future research. Additionally (in an appendix), I test for potential selection bias and verify my findings are robust to turnover.

Literature & Hypotheses

Since *An Inquiry into the Nature of Causes of the Wealth of Nations* (A. Smith, 1776), scholars have posited that an employee's performance is a result of that individual's ability, or talent (Groysberg, 2010; Rees, 1973). Past research has established that the top performing members of an organization contribute a disproportionate large fraction of their organization's total productivity. For example, top

[6] Most of the officers I studied likely served one or more extended tours in contingency operations in Bosnia, Kosovo, Afghanistan, Iraq, and other deployed locations.

computer programmers are eight times as productive as average programmers (Kelley & Caplan, 1993), the top one percent of inventors are five times as productive as average inventors (Narin & Breitzman, 1995), and the top one percent of workers in high-complexity jobs are over twice as productive as their average counterparts (J.E. Hunter, Schmidt, & Judiesch, 1990).[7] Boris Groysberg defines the immense contributions of these stars as "performers whose productivity massively outstrips that of their colleagues" (2010, p. 28).[8] Given that performance has large variance across employees, the overall productivity of organizations are partially dependent on their ability to select their workers (Schmidt, Hunter, McKenzie, & Muldrow, 1979; Schmidt, Hunter, & Outerbridge, 1986). If an organization could accurately predict the future performance of its job applicants and/or junior employees, then it could select, promote, develop, and separate them strategically which would have exponential positive impact and put the organization at a strategic advantage (Chambers, Foulon, Handfield-Jones, Hankin, & Michaels, 1998; Tulgan, 2001).

The Best and Brightest

An organization's "best and brightest" employees, its HI-POs, are those considered the organizations' most valuable employees *now*, because it is assumed they will become their organizations' highest-performers and senior leaders *in the future*. Since the term "best and brightest" refers to using current information to predict future outcomes, logic states that the factors that best identify the "best and

[7] This same study found that the top one percent of workers in complex jobs are 52% more productive than the average worker. For medium-complexity jobs, the top one percent of workers are 85% more productive than the average worker.

[8] The vocabulary used to describe an organization's top employees throughout recent scholarship has not been uniform, though one finds that the terms *star*, *high-potential (HI-PO)*, and *high-performer* have generally been used relatively synonymously throughout the performance literature. In this paper and stream of work, I will add *best & brightest* to that list of synonyms. At first glance, *high-potential* has a temporal component that may, seem to have a different meaning from the other three. For example, one could possibly say "Though Stephanie is just an average performer now, we predict she will become a high-performer in the future, therefore, she is a HI-PO", but I have not found that context used extensively in literature. The literature broadly posits HI-POs' temporal context is about the age of the employee, meaning young, or relatively junior, professional employees who are currently high-performers, and not about some mysterious trait or ability that will allow average-performing young employees to dramatically raise their levels of performance relative to their peers later in their careers. Also, when this paper refers to "stars," it is not referring to specific military flag officer rank (i.e. generals and admirals), which is often called "star-rank" in the military and defense culture, though a "star" performer in this paper could eventually become a military officer of "star-rank".

brightest" would be the same ones that most accurately predict junior employees' performances in the future.

Unfortunately, the term "best and brightest" has various interpretations. As a single construct, "best and brightest" has most often been defined from intellectual or academic perspectives, including possessing high cognitive ability (O'Leary, Lindholm, Whitford, & Freeman, 2002), being highly educated (Alvesson & Robertson, 2006), being a product of an elite institution (Kingston & Lewis, 1990; M. D. Naylor & Sherman, 1987), or performing well academically in college grades (Lau, Dandy, & Hoffman, 2007). These definitions all seem to imply perspectives where the "best and brightest" is synonymous with the "brightest."

Even though the term "best and brightest" often refers to academic achievement, many public figures and institutions have argued for a strong preference of "best," or active-self, over "brightest," or contemplative-self. Similar to the intellectual perspective, the practical perspective of "best and brightest" also has many definitions, though they typically involve practical measures of performance, such as the ability to accomplish a simple task, or the ability to lead a team to accomplish the same.

Though it is useful to debate which single variable most accurately identifies the "best and brightest," perhaps the term would be more accurately described predicted by using several variables at once. This is supported in some literature, as meta-researchers found that too many scholars and practitioners attempted to predict leadership behavior by using only single predictors, where, in fact, the "prediction of leadership is likely to be a multivariate problem" (Lord & Hall, 1992, p. 153). The simplest way to do this would be to conflate (e.g. average) several distinct variables into one measure of "best and brightest." Though this would not allow fidelity on what sub-factors are the strong signals and which ones are noise, a conflated measure for "best and brightest" may be more accurate than using a single predictor.

Perhaps the "best and brightest" could be more usefully defined by treating each of the contributing explanatory variables separately. To do this, I will categorize "best" as abilities and traits that contribute to practical performance, such as motivation, grit, and ability to apply leadership and

social capital. Similarly, I will categorize "brightest" as the abilities and traits that contribute to intellectual performance, such as cognitive ability, college grades, and ability to apply intellectual capital.

Conflating adds the additional challenge of weighting the variables according to impact. For example, an obvious question would be: "If both intellectual ability and practical ability predict future performance, do the strengths of their predictive power differ, and how should each of them be weighted?" Additionally, there is some overlap between "best" and "brightest." For example, college grades, as will be discussed later, likely have both a cognitive ability ("brightest") and a motivation ("best") component. There may also be tension between the two categories.

Best and Brightest (Elite Academic Institutions)

This practical vs. academic (or "best" vs. "brightest") debate is over 100 years old, and has some roots in elite academia. In 1904, when Cecil Rhodes established the criteria for the famed scholarship he endowed, he indicated he did not want mere bookworms, but adequate scholars who demonstrated success in many outdoor sports, moral force of character, instincts to lead, and traits of devotion to duty, courage, and truth (Karabel, 2006). The criteria he set made academics a minority factor relative to the rest of the candidate's talents, including thirty percent academic, twenty percent athletics, thirty percent concern for others, and twenty percent for leadership (Rotberg, 1988).

In the mid-to-late twentieth century, Harvard, Yale, and Princeton, arguably America's most elite and influential educational institutions, started moving their admissions preferences away from an almost pure "brightest" emphasis towards allowing a substantial emphasis towards "best". After the thousands of GI Bill-funded student veterans that comprised so much of their late 1940's campuses graduated, Yale established National Merit Scholarships to attract applicants. In defining what they were after, Yale notably categorized their applicants into two types, "true scholars" and "fine citizens," and stated that they planned to give significantly more scholarships to "fine citizens" (Babbidge Jr., 1949). Showing a similar pivoting towards "best," Wilbur Bender, Dean of Admission and Financial Aid at Harvard in the 1950's, wished to limit the number of "top brains" to only ten percent of the class (Karabel, 2006, p. 292).

Princeton did the same. In the 1980's, when the Princeton faculty challenged the rejection of 30 percent of the absolute best academic applicants (called "academic 1's"), Princeton's Dean of Admissions James Wickenden replied that some of the brightest would likely have only a narrow contribution to campus (Princeton_University, 1980-1981). Anthony Cummings, Princeton's next Dean of Admissions explained this evolution of preference from brightest to best when he summarized, "Princeton has always wanted to train the next generation of leaders. We look for qualities of leadership and integrity as well as intellectual qualities" (Jeffery & Eichhorn, 1985, p. 1).

Is Job Performance the Same as Leadership Performance?

Leadership matters. Good management has been shown to cause increases of between 5.7 (A. B. Thomas, 1988) to 14.5 percent (Lieberson & O'Connor, 1972) to the bottom line, and CEOs have been shown to account for up to 14.7 percent of a firm's total profits (Wasserman, Nohria, & Anand, 2001). Similarly, scholars have also shown that management quality also contributes to organizational performance of public service organizations (Boyne, 2004; Meier & O'Toole, 2001).

In this paper, I define leadership performance as “the organization's rating of an individual in a leadership position,” while I define leadership effectiveness as “how effective that person actually is at achieving Richard Hackman's four requirements of a leader: to achieve the mission, make the organization better, make the people better, and leave the people more satisfied” (Hackman, 2002). In other words, leadership performance is how much efficacy the organization thinks the leader is, and leadership effectiveness is how much efficacy they really have. Certainly organizations attempt to calibrate leadership performance to their manager's actual leadership effectiveness, though these correlations will be imperfect. Military officer promotions and selections are largely based on leadership performance, since most of the time under ratings, they are in managerial roles, and the ratings are the organization's view of their performance, not necessarily their actual performance.

While measuring leadership performance has similarities to measuring job performance, it also has differences. In examining it closely, leadership has both a task component and a social component

(Kraiger & Ford, 1985; Scott A. Snook, 2007), therefore, the accurate prediction of leadership performance may require multivariate analysis (Lord & Hall, 1992).

Disciplinary Perspectives on Performance

Throughout the years, psychologists, sociologists, and other economists have added nuance and further understanding to this idea. Though the findings of each of these groups of discipline-based scholars contribute independently to developing an understanding what predicts an individual's work performance, their ideas are often complimentary and have substantial conceptual overlap. Next, this paper will briefly examine each discipline's predictions.

Psychology: Cognitive Ability and Job Performance

Psychologists have generally described cognitive ability and personality as attributes that predict worker output quantity and quality. Cognitive ability is "the ability to understand abstract concepts and ideas, to reason accurately, and to solve problems" (Pearce, 2009, p. 44). Called "g" in Spearman's seminal work *The Abilities of Man* (1927), cognitive ability, or general intelligence, is frequently referenced as a significant predictor of achievement. The story of the intelligence-to-performance link is that people with higher intelligence learn their job requirements faster, thus enabling them to perform higher than their peers at the same tasks. This concept is described in Thorndike's classic theory of learning and performance, where he posits that if one cannot learn by recognizing what is significant and retain and apply the lesson from the experience, one cannot perform (E. L. Thorndike, 1898).

Many empirical studies have confirmed the intelligence-to-performance relationship (J.E. Hunter, 1986; J. E. Hunter & Schmidt, 1996; Ree & Earles, 1992). Hunter's (1986) meta-analysis of over 1,000 studies of military and civilian organizations showed that general cognitive ability predicted both an employees' ratings (subjective performance) and measurable output (objective performance).[9] Indeed,

[9] Specifically, Hunter found that general cognitive ability strongly predicted job performance (correlation, ρ=0.75). A second meta-analysis also confirmed cognitive ability was a powerful predictor of job performance, with a correlation of $\rho = 0.30$

(Spearman's) "g can be said to be the most powerful predictor of overall job performance" (Gottfredson, 1997, p. 83), and there is "massive evidence from hundreds of studies showing that general cognitive ability predicts performance on all jobs" (J.E. Hunter, 1986, p. 1). In fact, a recent organizational behavior overview concluded "there is now no question that cognitive ability is the best general predictor of job performance," and is more than twice as predictive as the strongest personality predictor of job performance (Pearce, 2009, p. 44).

Cognitive ability may be even a stronger predictor of leader performance. The relationship between Spearman's g and job performance was even stronger when measuring the employees' performances in high-complexity jobs, in managerial roles, and as the employee ages (J.E. Hunter, 1986; J. E. Hunter & Schmidt, 1996).[10] As all three of these conditions generally apply to most positional leaders most of the time, g should be highly predictive of the performance of positional leaders. Additionally, cognitive ability predicts success in leader behaviors, such as being patient, having a greater willingness to take calculated risks, having social awareness, and having the ability to plan and act strategically (Burks, Carpenter, Goette, & Rustichini, 2009).

Research has shown that cognitive ability can be measured through aptitude tests. There is evidence that cognitive ability is comprised of various factors (R. L. Thorndike, 1949), including verbal, quantitative, and occasionally technical aptitudes (J.E. Hunter, 1986). Since the Scholastic Aptitude Test (SAT) primarily assesses quantitative and verbal aptitude, and scholars have found that an individual's SAT score has a high correlation with their IQ (ρ=0.82 [ρ=0.86 corrected for nonlinearity], N=917; and ρ=0.48 [ρ=0.72 when corrected for restricted range], N=104) (Frey & Detterman, 2004) [11], I will operationalize cognitive ability with the *SAT Score*. All cadet applicants take the SAT or ACT for admission to West Point, and those who take the ACT have their scores converted to an equivalent SAT

(Bobko, Roth, & Potosky, 1999). Additional individual research projects that found a strong correlation between cognitive ability and job performance include correlations of ρ=0.37, N=4,039 (McHenry, Hough, Toquam, Hanson, & Ashworth, 1990), ρ=0.22, N=3,597, and ρ=0.43, N=1,793 (Schmitt, Gooding, Noe, & Kirsch, 1984).

[10] Researchers found cognitive ability's predictive validity of job performance to be 0.58 for professional-managerial jobs, 0.56 for jobs of high technical complexity, 0.51 for jobs of medium complexity, 0.40 for semi-skilled jobs, and 0.23 for unskilled labor (John E. Hunter, 1980; John E Hunter & Hunter, 1984).

[11] A subsequent found a significant relationship between ACT Scores and cognitive ability (Koenig, Frey, & Detterman, 2008)

score for comparison. Because cognitive ability predicts performance, is more significant under complex and managerial jobs, and may be measured by cognitive aptitude tests, my first hypothesis is:

Hypothesis 1: West Pointers' cognitive abilities will predict higher officer job performances. Specifically, cadets who scores higher on the SAT are more likely to be officially designated by the Army as a high-performing officers than officers who achieved lower SAT scores.

Other scholars argue that cognitive ability is only predictive up to a certain point, and that personality traits, inherent competencies, and learned behaviors may be more accurate predictors of performance. Additionally, other forms of intelligence that may predict performance include emotional intelligence (Goleman, 2006), practical intelligence (Sternberg & Hedlund, 2002), competence (McClelland, 1973), tacit knowledge (Wagner, 1987), and cultural intelligence (Sternberg & Grigorenko, 2006). Gardner's multiple intelligence theory (1985) summarizes the theme of this stream of ideas by concluding that intelligence is too complex a notion to measure by only using a single indicator such as Spearman's g.

Collegiate performance may be a more robust way to predict performance, because academic grades are likely also the result of a personality trait that predicts performance and motivation (Gagné & St Père, 2002; Hollenbeck & Whitener, 1988). In 1955, job performance was shown to be a function of both ability and motivation (Maier, 1955). A meta-analysis of 108 studies that looked at the relationship between college grades and adult achievement showed a small average positive correlation (ρ=0.18), with increased correlations in military settings and when job performance was determined by subjective ratings from supervisors (Cohen, 1984).[12] Additional studies have also shown that general cognitive ability and motivation predict higher salaries, more rapid pay increases, and more frequent promotions (McCall, 1997). Since a combination of motivation and cognitive performance has been shown to predict job performance, and a cadet's *Academic GPA* is influenced by both motivation and cognitive ability, my second hypothesis follows:

[12] In the three studies that were conducted in a military context, the correlation between college grades and adult achievement was (ρ=0.39) (Cohen, 1984).

Hypothesis 2: West Point cadets' Academic GPAs will predict higher job performances as officers. Specifically, cadets who achieve higher cumulative Academic GPAs are more likely to be officially designated by the Army as high-performing officers than officers who achieved lower West Point Academic GPAs.

Though the combination of cognitive ability and motivation applied to collegiate academics may be predictive of later performance, motivation alone has also been shown to influence performance. Motivation is a measurable trait independent from cognitive ability, or IQ (Gagné & St Père, 2002), and personality operates through motivation to affect performance (Hollenbeck & Whitener, 1988). Scholars have suggested that the Big Five (Norman, 1963) personality trait *conscientiousness* reflects dependability, persevering, an achievement-orientation, as well as being careful, responsible, organized, and planful. Since conscientiousness, also called *will* or *will to achieve*, was shown to have a low correlation to general cognitive ability (R.R. McCrae & Costa, 1989), conscientiousness can be evaluated separately. Indeed, conscientiousness, which is typically measured through a short self-report questionnaire, has been shown to positively predict job performance, including a meta-analysis correlation of ρ=0.18 (Bobko et al., 1999). Additional research illustrated conscientiousness-performance correlations of ρ=0.16, N=4,039 (McHenry et al., 1990), ρ=0.18, N=31,275 (Mount & Barrick, 1995), ρ=0.03, N=465 (Pulakos & Schmitt, 1996), and ρ=0.12, N=450 (Tett, Jackson, & Rothstein, 1991). Indeed, some scholars claim conscientiousness is the personality trait most predictive of job performance (Murphy, Cronin, & Tam, 2003).

Similar to conscientiousness, *agreeableness* is another Big Five personality trait that has been shown to significantly predict performance (Bartone, Snook, & Tremble Jr, 2002). Since leadership potential is, at its core, social capital -- the ability to build and leverage human relationships both inside and outside of one's immediate organization to get things done (Ireland, Hitt, & Vaidyanath, 2002; Scott A Snook, 2013), a more agreeable personality could facilitate social skills and predict a higher performing leader. Indeed, a study of Bell Labs engineers highlighted that leadership, networking, self-management, and taking initiative were what separated the top from the average performers (Kelley & Caplan, 1993).

Job ratings are sometimes force-distributed among employees, meaning that a supervisor is prohibited from ranking all of their employees with the highest possible rating. Competitive people have been shown to perform well when limited recognition is available (Huberman, Loch, & Önçüler, 2004), showing that being competitive in itself predicts performance in the context of limited rewards.

Additionally, employees' initial job performances can predict their performances five to six years later (Berlew & Hall, 1966), though employees' successes are influenced by their organizational context. Allison and Long's (1990) foundational work on portability showed that the future performance of employees who change organizations may be affected by the culture of their receiving organization. Upon graduation, West Pointers change sub-organizations of the U.S. Military. For example, after they graduate from West Point, they typically get assigned to a troop-unit, such as the 82nd Airborne Division at Fort Bragg, North Carolina, or the 1st Armored Division at Fort Bliss, Texas. Since the contexts between being at West Point as a cadet and being in an U.S. Army as an officer have many similarities (e.g. hierarchy, internal labor market, force-distributed subjective job ratings, military emphasis, etc.), West Point cadets' job performances may be highly portable, and therefore predictive of that cadet's later job performance as an officer. Since the *Military Development GPA* is the cumulative statistic of 11 force-distributed ratings over four years, and is 70 percent of a cadet's cumulative job performance, while approximately 50 percent of those ratings were while the cadet was in leadership positions, I hypothesize:

Hypothesis 3: West Point cadets' Military Development GPA will predict higher job performances as officers. Specifically, cadets who achieve higher cumulative Military Development GPAs are more likely to be officially designated by the Army as high-performing officers than officers who achieved lower Military Development GPAs.

Economics: The Performance of Superstars

Over a century ago, Alfred Marshall's *Principles of Economics* identified *superstars* as those of high ability who commanded very high rewards for their work (Marshall, 2009). Economist Sherwin Rosen expanded on this perspective of performance by proposing that "a cardinal measure of quality or

talent must rely on measurement of actual outcomes" (Rosen, 1981, p. 848) and called people who dominate the activities in which they engage *superstars* (Rosen, 1981). Since cadets' two most significant graded outputs are their cumulative *Academic GPA* and *Military Development GPA*, cadet "superstars" would be those who performed near the top of their peers in both areas. Since superstars dominate "all-activities" in which they engage and assuming this trait holds over time, my next hypothesis, which is essentially a joint hypothesis of Hypotheses 2 and 3, is:

Hypothesis 4: West Pointers who are in the top one-third of their classes in both Academic GPA and Military Development GPA are more likely to be officially designated by the Army as high-performing officers than West Pointers who were not in the top one-third of their classes in both Academic GPA and Military Development GPA.

Gender, Ethnicity, and Performance

Even though women make up one-half of the potential managerial workforce, they only occupied between 13.5 and 14.6 percent of the executive positions of Fortune 500 companies from 2009 to 2013 (Catalyst, 2014). Because females make up between 10 and 16 percent of West Points' graduating classes from 1992-2004 and 15.5 percent of the overall Army population in 2012 (DASD, 2012), they could be considered either *tokens* or *minorities* in their organization (Kanter, 1977).[13] Due to their small relative numbers, token and minority groups lack the ability to create group-based power and may be discriminated against by the dominant or majority groups, respectively.

Other research has shown that women who have been successful in traditionally male-dominated domains are less liked and badmouthed more than equivalently successful men, and this gender-based dislike can have career-harming outcomes (Heilman, Wallen, Fuchs, & Tamkins, 2004). The highly subjective Army officer annual rating system is a possible conduit for such bias.[14] Additionally, since

[13] Kanter defined groups representing 15 percent or less of the overall population as tokens, and those representing between 15 to 35 percent as minorities (assuming a homogenous group made up the majority of the other employees).
[14] The Army instructs its promotion boards to be alert to the possibility of past or current discrimination, sets the goal of promoting each minority and gender group to at least the same percentage as the major population, and establishes a second look

women are forbidden from entering some Army branches, specifically Infantry, Armor, and Special Forces, and their job eligibility is limited within certain others, they may face valuative discrimination, which is discrimination against not an individual, but "against classes of jobs help primarily by women" (D. J. Phillips, 2005). In other words, the jobs women hold, may not be as valued by the organization as the jobs men hold. Therefore, female officers' overall perceived value to the organization may be seen as lower than average performing male officers, and the results of years of this bias playing out is likely seen in the subjective Army promotion system. Additionally, Human Capital Theory would argue that their experience is less marketable within the Army, because they haven't had the same access to important developmental jobs as males (G.S. Becker, 1962).

Biases and structural issues such as these may persist in the Army because research has shown that gender hierarchies and norms in organizations are transferred through leaders' moving from organization to organization (D. J. Phillips, 2005). Therefore, internal labor markets that have historically discriminated against women may be slower to approach women's promotion equality because they have no outsiders entering positions of influence with experience under different organizational genealogies. Moreover, their experiences of the past become the foundations for how they design their incumbent organizations. Indeed, previous studies have provided evidence that this issues can lead to lower promotion rates for women, as seen in a 1990's study of the U.S. Army (Baldwin, 1996). This trend is also seen in the Army of today. As of March 2014, women accounted for only 7.4 percent of Army general officers (US_Army_GOMO, 2014), even though they made up 12.8 percent of the total active-duty Army population (DASD, 2012).

Similarly to West Point women, each of the ethnic minorities groups at West Point could also be considered token groups because of their relatively small sizes as compared to the Caucasian population. Indeed, the literature has also shown that underrepresented ethnic minority leaders may be held to different standards than Caucasian managers. One example is with African-American leaders in general,

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system where officers who are initially not selected for promotion are again considered before the promotion board is completed (Stephanopoulos & Edley, 1995).

who may be forced to adopt a gentle interactive style to disarm their followers' performance-inhibiting biases, while assertive Caucasian leaders are not subject to the same biases, and therefore, are not punished by having to conform to certain styles, which may artificially limit the potential effectiveness of ethnic minority leaders (Livingston & Pearce, 2009). Another example is that black managers were seen to receive lower job performance and promotability ratings than Caucasian managers in both the relationship component of performance and the task component of performance (Greenhaus, Parasuraman, & Wormley, 1990; Kraiger & Ford, 1985).

Additionally, Castilla & Benard (2010) show that promotion systems designed to be meritocratic may inadvertently discriminate against women and underrepresented minorities. These issues may be playing out in the Army promotion system. As of March 2014, minorities only account for only 20.2 percent of Army general officers (US_Army_GOMO, 2014), even though they constitute 30.9 percent of the total Army population (DASD, 2012).

Rosen's superstar theory (1981) posits that top performers reap disproportional rewards, but does not specifically investigate if, and how, superstar effects differ for females and underrepresented-minorities. Since West Pointers' early performance factors and their later performance outcomes are known, this provides an opportunity to see if the superstar effect is equal across various demographic groups, or if there are significant variances. Since females and under-represented minorities are token groups within the U.S. Army who may have to deal with potential resulting discrimination, cadet superstars who dominate the most significant cadet performance outcomes may experience superstar effects different than their male and Caucasian classmates. Therefore, my final two hypotheses include:

Hypothesis 5: Female West Pointers who are in the top one-third of their class in both Academic GPA and Military Development GPA will experience lower officer job performance effects than male West Pointers who are in the top one-third of their class in both Academic GPA and Military Development GPA.

Hypothesis 6: Ethnic minority West Pointers who are in the top one-third of their class in both Academic GPA and Military Development GPA will experience lower officer job performance effects

than Caucasian West Pointers who are in the top one-third of their class in both Academic GPA and Military Development GPA.

Methods

Military Context

To fully understand the data and appropriately the analysis, some attention must be given to the military context from which its participants came. This section will provide a general framework for understanding the Army officer promotion system.

The Army has three primary commissioning sources: the Reserve Officers' Training Corps (ROTC), United States Military Academy at West Point (USMA), and the Officer Candidate School (OCS). During the time of this study, ROTC commissioned the most Army officers, with West Point and OCS as a distant second and third.[15,16] Regardless of commissioning source, almost all Army officers have already earned a four-year academic degree from an accredited college or university. The career patterns and opportunities for officers from all three commissioning sources are structurally identical. Table 1 summarizes an Army officer's career path up through the ranks (Badger, 2004).

[15] The Army's largest commissioning program is the Reserve Officers' Training Corps (ROTC), which consists of more than 250 programs partnered with various public and private colleges and universities in all 50 states. The ROTC programs commission approximately 3,000 active-duty second lieutenants each year. The smallest commissioning source is Officer Candidate School (OCS), which runs an intense twelve-week, in-residence course for recent college graduates and mid-grade enlisted soldiers with high leadership potential and a college education. Since its program of instruction is substantially shorter than its two counterparts, OCS is used to rapidly increase or decrease the supply of officers to fit the often ebbing and flowing needs of the Army. These numbers vary slightly from year to year, with the most variation being in OCS, due to its shorter time horizon. In 1992, the percentages of Army officers commissioned were 66% ROTC, 25% West Point, and 9% OCS. In 2002, the percentages were 57% ROTC, 20% West Point, and 23% ROTC (Office_of_Economic_and_Manpower_Analysis, 2014).

Table 1: U.S. Army officer career promotions and education, active-duty [a]

Army rank	DoD pay grade	Total number on active duty [b]	Desired minimum selection rate from previous rank [c]	Typical time served in this rank	Desired time before considered for normal promotion to this rank [h]	Are officers considered for 1-year early promotion to this rank?	Are officers given training along with promotion to this level?
Second Lieutenant	O-1	9,364	N/A	1.5 - 2 years	-	No	Yes- Officer Basic Course (4-6 mo.)
First Lieutenant	O-2	12,828	100%	1.5 - 2 years	2 years	No	No
Captain	O-3	28,126	95% [d]	7 years	3.5 to 4 years	No	Yes- Captain's Career Course (6 mo.)
Major	O-4	17,327	80% [e]	6 years	10 +/- 1 years	Yes	Yes- Command and General Staff College (9 mo.)
Lieutenant Colonel	O-5	10,019	70% [f]	5 years	16 +/- 1 year	Yes (up to two years total)	No
Colonel	O-6	4,386	50%	4 years	22 +/- 1 years	Yes (up to three years total)	Top 1/3 yes, U.S. Army War College
Brigadier General	O-7	136	5%	?	26 years	N/A	Yes, DoD Capstone, 6 weeks
Major General	O-8	116	-	-	28 years	N/A	No
Lieutenant General	O-9	52	-	-	30 years	N/A	No
General	O-10	11	-	-	32 years	N/A	No
Total	-	82,365	-	-	-	-	-

[a] As of October, 2013
[b] (OSD, 2012).
[c] (USG, 1980), (Schirmer, 2006).
[d] Almost all Army officers get the opportunity to serve as a company commander, or equivalents, for 1-2 years during their time as a captain.
[e] Majors typically are staff officers, not commanders.
[f] Approximately 20% of lieutenant colonels are selected to be battalion-level commanders
[g] Approximately 20% of colonels are selected to be brigade-level commanders
[h] (Schirmer, 2006).

Similar to "vacancy chain" models of promotion that have been studied in hierarchal internal labor markets (White, 1970), the U.S. Army must lose officers at every level, as there isn't room for all of them to be promoted and continually placed into positions of increased responsibility. In fact, U.S. Code (law) limits the number of majors, lieutenant colonels, colonels, and general officers that the Army, and the other services, can have on active-duty at any one time (USG, 1980). The Army uses these limits and turnover modeling to inform its intake quantity of second lieutenants from year to year.

A cadet's or officer candidate's performance while in West Point, ROTC, or OCS may offer the first indications of future high-performance as an Army officer.[17] West Point, is a four-year federal military college that has a student body of approximately 4,300 cadets. Each year, West Point commissions approximately 1,000 cadets into the active-duty Army as second lieutenants, each with a Bachelor of Science degree in one of over forty possible academic majors. While at West Point, cadets are ranked academically, militarily, and physically via a traditional 4.0-scale grade point average (GPA) across their four year experience. Cadets in ROTC and OCS are graded in a similar manner, though not as comprehensively, likely due to ROTC and OCS instructors having much less contact time with their cadets than West Point instructors.

Every traditional active-duty Army officer that is commissioned from October 1st to September 30th of the following year, regardless of source of commission, is put together into a single "year group" for enterprise-wide talent management purposes, which sets the timing of their eligibility for promotions. To inform each promotion event and to have a formal record of each officer's service, an officer receives a written officer evaluation report (OER) at least once a year. The OER is a subjective, two-page evaluation written by the officer's direct supervisor and that supervisor's manager. The promotions to first lieutenant, typically after two years as an officer, and, then, to captain, typically after four total years as an officer, are usually considered automatic. Therefore, the first competitive promotion event in an Army officer's career is usually an evaluation by the majors' promotion board.

Approximately seven to nine years after each cohort of Army second lieutenants[18] is commissioned, a confidential and sequestered group of senior officers are appointed by the Secretary of the Army to meet and hold the majors' promotion board. The board reviews each eligible officer's personnel file, which contains officer performance evaluations (considered to be the most important criteria by far), training records, job experiences, and demographics before selecting the top officers for

[17] West Point and ROTC have cadets, and OCS has officer candidates.
[18] A cohort includes every Army officer that was commissioned from October 1st to September 30th of the following year (which is the US Government's fiscal year calendar). Almost all West Point cadets are commissioned into their cohort at the time of West Point's annual graduation, which typically occur at the end of every May. Though most ROTC officers are also commissioned in the May time-frame, they have many officers who graduate at other times during the year, and OCS officers are commissioned year round.

promotion. Notably, almost all of the eligible officers' cadet/officer-candidate performance data while in their commissioning program are not available during the promotion board's evaluation process. More specifically, West Point graduates' *Academic GPA*, *Military Development GPA*, and *Physical GPA* are not part of the officers' personnel files and, therefore, not reviewed by the promotion boards.[19] Similarly, most ROTC or OCS officers' academic and military performance records from their pre-commissioning programs are not given to promotion boards, though the Distinguished Military Graduate (DMG) identifier (whether or not ROTC and OCS officers were considered to be in the top 20 percent of their respective graduating classes) is visible on their permanent records reviewed by promotion boards. West Pointers' officer records do not include a designation equivalent to DMG.

Five to seven years after the majors' promotion board has evaluated a cohort, which is at the 14 to 16 year point of officers' careers, all majors in same year group are then considered for early promotion to the rank of lieutenant colonel. An officer need not have been promoted early to major to be considered or selected for early promotion to lieutenant colonel. The Army uses the officers' personnel files, again focusing primarily on their officer performance evaluations, to choose the best 3-10 percent to promote one-year early.

Historically, the senior officers sitting on the two promotion boards select around five percent of senior captains to promote one year ahead of their peers, referred to as "below-the-zone" or "early promotion" in Army vernacular. The Department of Defense Personnel Management Act (DOPMA) of 1980 caps the maximum percentage of early promotion selectees that can be chosen by an Army officer promotion board to 10 percent of the total selectees, but the Army can request the Secretary of Defense grant them a case-by-case exception to increase the limit to 15 percent (USG, 1980). Being selected for

[19] Nevertheless, some observables may allow board members to infer some West Pointers' USMA class rankings. For example, during the time period of this study, West Pointers chose their first duty assignments as officers in order of overall class rankings as seniors, which was dominated by academic GPA. Italy was typically the most sought after first duty station for West Pointers, and therefore, West Pointers who were assigned to Italy could be reasonably assumed to be near the top of their graduating class in academic GPA. After Italy, cadet preferences for job locations (over 20 major possibilities) were more idiosyncratic to the individual cadet (tastes, living near family, desire for adventure, etc.) and generally not strongly correlated with class rankings.

early promotion is akin to being appointed a "star" in the talent literature (Groysberg, 2010).[20] The few officers selected for early promotion are seen throughout the Army as high-performing leaders with exceptional potential for future service. Indeed, many of these "below-the-zone" selectees go on to lead the highest ranks of the Army, evidenced by 67 percent of colonel-level commanders and 80 percent of the one and two-star Army generals on active duty in 1980 having received at least one early promotion (Hicks, 1987).[21]

Most Army officers are not selected for early promotion, but rather are promoted "on time," which is not perceived as pejorative. Officers not selected for early promotion are again considered for promotion ("in the zone") the following year, and most of them are selected for a "due course" or "on time" promotion at that point.

Just after each year's lieutenant colonel promotion board, a separate board meets to evaluate those officers selected for lieutenant colonel for possible battalion-level command, where selected officers are put in charge of approximately 500 other soldiers. Approximately 20 percent of all lieutenant colonels are selected to command battalion-level organizations. Almost all brigade-level commanders (those supervising approximately 2,000 soldiers) and general officers were previously selected as battalion-level commanders (US_Army_GOMO, 2014). Therefore, selecting an officer for battalion-level command is effectively a prerequisite to being eventually promoted to the most senior levels of Army leadership.

Data

A de-identified archival data set of 12,056 observations of West Point graduates from graduation years 1992-2004 (approximately 900 graduates per class)[22] was used to perform my analysis[23]. The dataset includes the following: (pre-cadet) applicant data, cadet performance data, officer performance

[20] These officers are advanced to the next older year group. For example, an officer commissioned in 1995 who was selected for early promotion will now be managed with year group 1994, a more senior cohort.
[21] One must be careful when interpreting these data statistics, as officer policy and trends can change quickly.
[22] Data was gathered through the Office of Economic & Manpower Analysis (OEMA), West Point, NY
[23] The subsequent analysis is for active-duty forces only. Officers in reserve or National Guard status are not considered.

data, officer deployment data, and demographics. The pre-cadet applicant data includes *SAT Scores* (verbal and math), information about athletic recruitment, and whether or not they attended the United States Military Academy Preparatory School (USMAPS). Their cadet performance data includes their cumulative *Academic GPA*, *Military Development GPA*, and *Physical GPAs* while at West Point. Their officer performance data includes whether they were selected for *Early promotion to major*, *Early promotion to lieutenant colonel*, and *Selection for battalion command*. The officers' deployment data (length of time deployed) is included, as well. Finally, their demographics include their gender, the *Army branch* they were commissioned into after graduation (infantry, armor, signal, etc.), their home state of residence before coming to West Point, and their West Point *Graduation year*.

Dependent Variables

I use the dichotomous variables *Early promotion to major*, *Early promotion to lieutenant colonel*, and *Selection for battalion command* as my dependent variables. I define each to take the value of 0 if the officer was considered for promotion/command but not selected, and 1 if the officer was considered and selected.[24] The *Early promotion to major* variable, which includes West Pointers from the classes of 1992-2004 who have remained in the military long enough to be considered for early promotion to major, has a mean of 0.11. The *Early promotion to lieutenant colonel* variable, which includes West Pointers from the classes of 1992-1997 who could have, based on their commissioning year, remained in the military long enough to be considered for early promotion to lieutenant colonel, has a mean of 0.11. The *Selection to battalion command* variable, which includes West Pointers from the classes of 1992-1996 who have remained in the military long enough to be considered for selection for battalion command, has a mean of 0.20.

Explanatory Variables

[24] Individuals who leave the organization are excluded from the analysis. Therefore, in the forthcoming section about the possible selection-bias, I ran additional robustness checks.

The *SAT Score* is the total Scholastic Aptitude Test (SAT) score from each cadet's West Point application (verbal score + quantitative score), but transformed by dividing it by 100, so the marginal effects of an one hundred point increase in *SAT Score* on the dependent variable would be apparent in the logistic odds-ratio regression output. During this time period the maximum possible *SAT Score* was 1600, and the lowest possible score was 400 (or 16.0 to 4.0, when transformed). Its mean value is 12.68. With a skewness of 0.01 and a kurtosis of 2.94, *SAT Score* appears normally distributed.

Additional explanatory variables include *Academic GPA* and *Military Development GPA* performance metrics, which are all measured on a 4.0 performance scale, based on the following letter and number equivalents: A=4.0, B=3.0, C=2.0, D=1.0, and F=0.0 with 0.33 points being added for a "+" and 0.33 points subtracted for a "-" (e.g., a B+ = 3.33).

Academic GPA is the cumulative total of each academic course's numeric grade value multiplied by the semester hours for that course, divided by total semester hours over four years. There are approximately 40 courses total. There is no formal forced curve for any class or overall *Academic GPA*, which appears to be normally distributed. Its mean value is 2.92. With a skewness of 0.23 and a kurtosis of 2.47, *Academic GPA* appears normally distributed.

Military Development GPAs are based on each cadet's cumulative job evaluations ratings and military course grades over four years. Seventy percent of this score is the force-distributed evaluation of the cadets' job performances in each of their assigned followership or leadership roles during their eleven terms (the eight semesters and three summer training periods). After each of the terms, cadets receive a military development grade, typically calculated by the following formula: 50 percent assigned by their cadet company tactical officer (typically a U.S. Army captain or major with legal command authority over a sub-group of 125 cadets), 30 percent assigned by their immediate cadet boss, and 20 percent assigned by their second and third level cadet bosses (Milan, Bourne Jr, Zazanis, & Bartone, 2002). In finalizing their performance evaluations, "tactical officer and cadet supervisors are instructed to consider 12 behavioral domains in relation to the cadet's leader performance" (Bartone, Eid, Johnsen, Laberg, & Snook, 2009, p. 503). This includes duty motivation, military bearing, influencing others, consideration

for others, professional ethics, planning and organizing, delegating, supervising, developing subordinates, decision making, and oral and written communication (United_States_Corps_of_Cadets, 1995).[25] Each of the cadets' eleven term military development grades were force-distributed within the graded cadets' platoons (30 cadets) or companies (120 cadets), with only 20 percent of cadets in any class within that group allowed to receive an A, 40 percent of cadets allowed to receive a B, and the remaining 40 percent earning a C or below during each grading event (Milan et al., 2002). Pluses and minuses (e.g. A-, C+) added or subtracted at the discretion of the supervisors were not subject to further force distribution. This process outputs a single military development grade for each cadet each term or period. The eleven separate military development grades across four years were combined to form the 70 percent job-evaluation component of the data's *Military Development GPA*.

The remaining thirty percent of the *Military Development GPA* are the grades the cadets earned in their yearly military science courses, which while academic in nature, were typically not as cognitively rigorous as the traditional (non-military) academic courses that make up their *Academic GPA*. *Military Development GPA* appears to be normally distributed (*M or* $\bar{x}$=3.07) with a skewness of -0.10 and a kurtosis of 2.89, *Military Development GPA* appears normally distributed.

Control Variables

A cadet's physical fitness grade point average (*Physical GPA*) is calculated with 50 percent of the grade being instructional coursework (such as gymnastics, swimming, boxing for men, close quarters combat for women), 30 percent semi-annual physical fitness test scores (push-ups, sit-ups, two mile run, and indoor obstacle course), and 20 percent competitive sport index (giving credit to cadets for playing varsity or club sports, and how well their teams did if they played intramurals). It is measured on a 4.0 performance scale, based on the following letter and number equivalents: A=4.0, B=3.0, C=2.0, D=1.0, and F=0.0 with 0.33 points being added for a "+" and 0.33 points subtracted for a "-". It is a four-year

[25] These twelve behavioral domains' construct validity were verified in a previous study (Schwager & Evans, 1996).

cumulative grade. There is no forced curve for *Physical GPA*, and its mean is 2.92. With a skewness of -0.19 and a kurtosis of 2.76, *Physical GPA* appears normally distributed.

The United States Military Academy Preparatory School (USMAPS) was located at Fort Monmouth, NJ, during the period of this study. *Prep School* is a dichotomous variable, defined to take a value of 1 if cadets attended USMAPS for the year prior to coming to West Point, and a 0 if they did not. Its mean is 0.14.

Recruited athlete is a dichotomous variable, defined to take the value of 1 if that cadet was officially recruited by West Point's Directorate of Intercollegiate Athletics with the goal of matriculation onto one of West Point's intercollegiate sports teams, and a 0 if they were not. West Point competes at the NCAA Division-I level in numerous sports, some of which include football, basketball, swimming, baseball, hockey, wrestling, softball, track, and cross-country.[26] *Recruited athlete's* mean value is 0.20.

Female is a dichotomous variable, defined to take the value of 1 if a female or 0 if a male, and has a mean of 0.34.

Similarly, the ethnicity control variables are dichotomous variables, defined as having the value of 1 if the cadet claims the corresponding ethnicity, and a value of 0 if not. The omitted ethnicity category is this analysis is Caucasian cadets, which comprise 83 percent of all individuals. The mean value of African-American is 6.4 percent, Hispanic-American is 3.7 percent, Asian-American is 5.4 percent, Native-American is 0.6 percent, and other ethnicity is 0.9 percent.

The *Year Group* dichotomous variables[27] are the years each cadet graduated from West Point (1992-2004). Each *Year Group* dummy is defined as having the value of 1 if the cadet graduated with that class, and a value of 0 if they did not. Since organization-related endogenous effects could possibly influence promotions and selections from year to year, *Year Group* also controls for enterprise-wide Army changes and external shocks from year to year. The Class of 2003 had the fewest graduates, with 855; and the Class of 1994 had the most graduates, with 1,023. The mean number of graduates per class

[26] West Pointers who were recruited athletes (Classes of 1978-1989) made general officer rank at or below the level other cadets (Betros, 2012, pp. 106-107).
[27] The data does not include numbers of students who started in each West Point class, just graduates.

was 930. Though different classes could potentially have endogenous factors influencing graduation numbers, differing class sizes are significantly influenced by increasing or decreasing admissions goals (i.e., the number of students West Point was allowed to accept) for the matriculating class four years prior to that date. These admissions goals are driven by projected future officer needs as defined by the Department of the Army.

There are two deployment control variables, $Deployed\ Years_{Year7}$ and $Deployed\ Years_{Year14}$, each of which is a continuous variable that indicates the total number of years that officer has spent deployed, measured at the seven year and fourteen year marks, which corresponds to the earliest possible times in these officers' careers when they were considered for early promotion to major and early promotion to lieutenant colonel/selection for battalion command, respectively. $Deployed\ Years_{Year7}$ has a mean of 0.9 (after seven years as an officer, the average West Pointer had been deployed for approximately 11 months total). It has a skewness is 0.41 and the kurtosis is 2.16. $Deployed\ Years_{Year14}$ has a mean of 1.5 years. $Deployed\ Years_{Year14}$ also has the skewness is 0.51 and the kurtosis is 3.0, appearing normally distributed.

Army branch dummies are the sixteen functions that West Pointers joined upon graduation. They include Infantry (19.2 percent), Armor (11.4 percent), Engineer (12.1 percent), Field Artillery (12.8 percent), Aviation (12.0 percent), Air Defense Artillery (5.0 percent), Chemical (0.6 percent), Signal (4.9 percent), Military Intelligence (7.6 percent), Military Police (2.4 percent), Ordnance (2.0 percent), Transportation (2.1 percent), Quartermaster (2.6 percent), Finance (0.8 percent), Adjutant General (2.2 percent), and Medical Service (2.0 percent). Each branch has its own dummy variable, with a 1 meaning the cadet was commissioned into that branch specialty and a 0 meaning they were not. During this time period, female cadets could not commission into Infantry or Armor, but could commission into the other fourteen *Army branches*.

The summary statistics of the dependent, explanatory, and control variables are presented in Table 2 below:

Table 2: Summary statistics

Type	Variable	Obs	Mean	Std. Dev.	Min	Max
Dependent	Early promotion to Major	5,584	0.10	0.30	0	1
Dependent	Early promotion to Lieut. Colonel	1,614	0.11	0.31	0	1
Dependent	Selected for Battalion Command	1,594	0.20	0.40	0	1
Explanatory	SAT Score (total, divided by 100)	12,035	12.68	1.06	8.8	16.00
Explanatory	Academic GPA at West Point	12,012	2.92	0.44	1.85	4.24
Explanatory	Mil. Dev. GPA at West Point	12,007	3.10	0.34	1.52	4.12
Control	Physical GPA at West Point	12,004	2.92	0.41	1.44	4.11
Control	1-Yr USMA Prep School	12,056	0.14	0.34	0	1
Control	Recruited Athlete	12,054	0.20	0.40	0	1
Control	Female	12,056	0.13	0.34	0	1
Control	Caucasian	12,056	0.83	0.003	0	1
Control	African-American	12,056	0.064	0.25	0	1
Control	Hispanic	12,056	0.037	0.19	0	1
Control	Asian	12,056	0.054	0.23	0	1
Control	Native American	12,056	0.006	0.08	0	1
Control	Other Ethnicity	12,056	0.009	0.09	0	1
Control	Deployed Years$_{Year7}$	5,654	0.98	0.84	0	3.58
Control	Deployed Years$_{Year14}$	1,988	1.50	1.01	0	5.83

[1] Summary statistics for the control variables *Year Group* and *Army Branch* (function) are not listed in the above table for brevity's sake.

To examine the data's bivariate statistics, a correlation matrix was run. Of note, several variables are significantly correlated at the $p \leq 0.05$ level, including the three dependent variables. Each has a positive and moderate correlation with each other (early promotion to major and early promotion to lieutenant colonel: $\rho = 0.32$, early promotion to major and battalion command: $\rho = 0.32$, and early promotion to lieutenant colonel and selection for battalion command: $\rho = 0.39$). Similarly to the three officer performance outcomes, three of the cadet performance outcomes are also all significant positive and moderate correlates with each other (*Academic GPA* and *Military Development GPA*: $\rho = 0.42$; *Academic GPA* and *Physical GPA*: $\rho = 0.31$; and *Military GPA* and *Physical GPA*: $\rho = 0.36$).

SAT Score and *Academic GPA* also have a significant positive correlation, at $\rho = 0.48$, the highest magnitude of any correlation in this dataset.

The correlation matrix for the dependent, explanatory, and control variables is presented in Table 3 below:

Table 3: Correlation matrix

Variable	Early promotion to MAJ	Early promotion to LTC	Selected for Battalion Cmd	SAT Score (total)	USMA Academic GPA	USMA Military Development GPA	USMA Physical GPA	1-Yr Prep School
Early promotion to LTC	0.32*							
Select for Bn. Cmd.	0.32*	0.39*						
SAT Score (total)	-0.03	-0.05*	-0.10*					
Academic GPA	0.10*	0.02	-0.07*	0.48*				
Mil. Development GPA	0.19*	0.14*	0.21*	0.10*	0.42*			
Physical GPA	0.13*	0.12*	0.06*	-0.02*	0.31*	0.36*		
1-Yr Prep School	-0.03*	-0.03	-0.04	-0.21*	-0.24*	-0.01	-0.03*	
Recruited Athlete	0.01	0.06*	0.03	-0.33*	-0.22*	-0.13*	0.10*	0.05*
Female	0.01	0.02	-0.02	-0.05*	0.01	0.01	0.02*	-0.02*
African-American	-0.02*	0.00	-0.01	-0.22*	-0.20*	-0.11*	-0.07*	0.17*
Hispanic-American	-0.01	0.00	-0.01	-0.05*	-0.05*	-0.02	0.00	0.06*
Asian-American	0.01	-0.04	-0.02	0.09*	0.03*	-0.03*	0.00	-0.02*
Native-American	-0.01	-0.03	-0.02	0.00	-0.02	-0.02	-0.02	0.02*
Other Ethnicity	0.01	0.04	-0.02	0.01	0.00	0.01	0.02*	0.02
Deployed Years$_{Year7}$	0.12*	0.03	-0.09*	-0.02	0.00	-0.01	0.19*	-0.02
Deployed Years$_{Year14}$	0.14*	0.12*	0.00	-0.04*	-0.04*	-0.05*	0.05*	0.03

*p≤ 0.05
-MAJ is formal U.S. Army shorthand for major, and LTC is formal U.S. Army shorthand for lieutenant colonel

Variable	Recruited Athlete	Female	African-American	Hispanic-American	Asian-American	Native-American	Other Ethnicity	Deployed Years$_{Year7}$
Female	0.07*	1.00						
African-American	0.02*	0.05*	1.00					
Hispanic-American	-0.04*	0.01*	-0.05*	1.00				
Asian-American	-0.05*	0.02*	-0.06*	-0.05*	1.00			
Native-American	-0.01	0.01	-0.02*	-0.01*	-0.02*	1.00		
Other Ethnicity	0.00	0.01*	-0.02*	-0.02*	-0.02*	-0.01	1.00	
Deployed Years$_{Year7}$	-0.02	-0.02	-0.02	0.02*	-0.03*	0.00	0.05*	1.00
Deployed Years$_{Year14}$	0.02	-0.09*	0.00	0.00	-0.07*	0.01	0.03	0.63*

*p≤0.05

Methods & Results

To test hypotheses 1-3, I estimate the probability that a West Pointer being selected for early promotion to major, selected early for promotion to lieutenant colonel, and selected for battalion command is a function of cognitive ability, West Point performance, human capital, deployments history,

and demographic variables. Since each of the dependent variables are binary outcomes, the logit odds ratio (logistic) regression method allows for direct interpretation of the magnitude of significant predictors, thus, I applied a similar logistic (logit odds ratio) model specification for each.[28] For the analysis of what factors predict *Early promotion to major* (see Table 4a), I applied the following model specification:

Equation 1:

$$Logistic\ (likelihood\ of\ early\ promotion\ to\ major) = \alpha + (\beta_1\ x\ SAT\ Score) + (\beta_2\ x\ Academic\ GPA) + (\beta_3\ x\ Military\ Development\ GPA) + (\beta_4\ x\ Physical\ GPA) + (\beta_5\ x\ Prep\ School\ dummy) + (\beta_6\ x\ Recruited\ Athlete\ dummy) + (\beta_7\ x\ Female\ dummy) + (\beta_8\ x\ African\ American\ dummy) + (\beta_9\ x\ Hispanic\ American\ dummy) + (\beta_{10}\ x\ Asian\ American\ dummy) + (\beta_{11}\ x\ Native\ American\ dummy), + (\beta_{12}\ x\ Other\ Minority\ dummy) + (\beta_{13}\ x\ Deployed\ Years\ [7\ years]) + (B_{14}\ldots B_{26}\ x\ Year\ Group\ dummies) + (B_{26}\ldots B_{41}\ x\ Army\ Branch\ dummies) + \varepsilon.$$

The same explanatory and control variables are used to model likelihood of early promotion to lieutenant colonel (Table 4b) and selection for battalion command (Table 4c), with the exception of substituting *Deployed Years (14 years)* for *Deployed Years (7 years*).

Equation 2:

$$Logistic\ (likelihood\ of\ early\ promotion\ to\ lieutenant\ colonel) = \alpha + (\beta_1\ x\ SAT\ Score) + (\beta_2\ x\ Academic\ GPA) + (\beta_3\ x\ Military\ Development\ GPA) + (\beta_4\ x\ Physical\ GPA) + (\beta_5\ x\ Prep\ School\ dummy) + (\beta_6\ x\ Recruited\ Athlete\ dummy) + (\beta_7\ x\ Female\ dummy) + (\beta_8\ x\ African\ American\ dummy) + (\beta_9\ x\ Hispanic\ American\ dummy) + (\beta_{10}\ x\ Asian\ American\ dummy) + (\beta_{11}\ x\ Native\ American\ dummy), + (\beta_{12}\ x\ Other\ Minority\ dummy) + (\beta_{13}\ x\ Deployed\ Years\ [14\ years]) + (B_{14}\ldots B_{26}\ x\ Year\ Group\ dummies) + (B_{26}\ldots B_{41}\ x\ Army\ Branch\ dummies) + \varepsilon.$$

[28] The regression coefficients for logit odds-ratios (logistic command in STATA 13.1) are equal to e^{β} of standard logit coefficients. Additionally, the robust standard errors for the logit odds-ratios throughout this paper are all relative to 1.0, not 0. For more information of logistic regression, see (Hosmer Jr, Lemeshow, & Sturdivant, 2013)

Equation 3:

$$Logistic\ (likelihood\ of\ selection\ for\ battalion\ command) = \alpha + (\beta_1 \times SAT\ Score) + (\beta_2 \times Academic\ GPA) + (\beta_3 \times Military\ Development\ GPA) + (\beta_4 \times Physical\ GPA) + (\beta_5 \times Prep\ School\ dummy) + (\beta_6 \times Recruited\ Athlete\ dummy) + (\beta_7 \times Female\ dummy) + (\beta_8 \times African\ American\ dummy) + (\beta_9 \times Hispanic\ American\ dummy) + (\beta_{10} \times Asian\ American\ dummy) + (\beta_{11} \times Native\ American\ dummy), + (\beta_{12} \times Other\ Minority\ dummy) + (\beta_{13} \times Deployed\ Years\ [14\ years]) + (B_{14} \ldots B_{26} \times Year\ Group\ dummies) + (B_{26} \ldots B_{41} \times Army\ Branch\ dummies) + \varepsilon.$$

The results of each of the step-wise logistic regressions follow (Table 4a, 4b, & 4c), as does a comparison of the fully-specified versions of all three full-models (Table 5a), and a fully-specified version where the independent variables are standardized, allowing their magnitudes to be compared to each other.

Table 4a: Logistic (logit) regression, dependent variable: *Early promotion to major* [29]

	(1)	(2)	(3)	(4)
Female	1.12	1.05	1.05	1.07
	(0.19)	(0.19)	(0.19)	(0.19)
African-American	0.77	0.89	0.91	0.76
	(0.17)	(0.20)	(0.21)	(0.18)
Hispanic-American	0.79	0.88	0.89	0.84
	(0.21)	(0.24)	(0.25)	(0.24)
Asian-American	1.11	1.21	1.21	1.25
	(0.22)	(0.25)	(0.25)	(0.26)
Native-American	0.55	0.66	0.66	0.66
	(0.39)	(0.46)	(0.45)	(0.43)
Other minority	1.16	1.15	1.15	1.22
	(0.47)	(0.46)	(0.46)	(0.48)
Recruited Athlete	1.15	1.54***	1.57***	1.37**
	(0.15)	(0.20)	(0.21)	(0.19)
Physical GPA	3.25***	1.75***	1.71***	1.55***
	(0.42)	(0.24)	(0.24)	(0.22)
Deployed Years (as of year 7)	1.61***	1.56***	1.57***	1.56***
	(0.11)	(0.11)	(0.11)	(0.11)
1-Year Prep School	0.72**	0.63***	0.65***	0.59***
	(0.10)	(0.09)	(0.10)	(0.09)
Military Dev. GPA		7.97***	7.54***	6.76***
		(1.35)	(1.38)	(1.23)
Academic GPA			1.11	1.63***
			(0.13)	(0.23)
SAT Score				0.73***
				(0.04)
Constant	0.00***	0.00***	0.00***	0.00***
	(0.00)	(0.00)	(0.00)	(0.00)
Correctly classified	89.82%	89.84%	89.82%	89.79%
Incremental χ^2	-	145.13***	0.63	33.15***
Pseudo R^2	0.079	0.119	0.119	0.128
# Obs (N)	5,512	5,510	5,510	5,505

* p≤0.10, **p≤0.05, and ***p≤0.01

[a] Incremental χ^2 is the likelihood-ratio test that the added explanatory or control variables add independently to the previously specified model. -All models are controlled for *Class Year* and *Army Branch* (function). The β-values are all in logistic/odds-ratio format, which is based around 1.0. A number below one is negatively predictive, and a number above one is positively predictive. Robust standard errors are listed below each β value in (parentheses). Correctly classified is a goodness of fit test for the entire model from STATA 12.1 [estat classification, cutoff (.06)], showing the percentage of time that model would accurately predict the correct outcome. Specifically, it tests if H_0: independent variable 1 = independent variable 2 = … = 0.

[29] Equation (4) was also tested using OLS regression and the results were robust to the logit specifications. This test included standardized coefficients (STATA's beta command) in order to have comparable coefficients that would confirm the order of the most impactful explanatory variables. The standardized OLS results included 1-Year *Prep School* (β= -0.04, p≤0.001), *Military Development GPA* (β=0.11, p≤0.001), *Academic GPA* (β=0.02, p≤0.001), and SAT Score (β= -0.01, p≤0.001).

Table 4b: Logistic (logit) regression, dependent variable: *Early promotion to lieutenant colonel*[30]

	(1)	(2)	(3)	(4)
Female	1.55	1.57	1.56	1.57
	(0.58)	(0.59)	(0.60)	(0.61)
African-American	1.18	1.38	1.38	1.28
	(0.41)	(0.48)	(0.49)	(0.45)
Hispanic-American	1.07	1.16	1.16	1.12
	(0.46)	(0.52)	(0.52)	(0.51)
Asian-American	0.32**	0.32*	0.32*	0.34*
	(0.18)	(0.19)	(0.19)	(0.21)
Native-American				
Other minority	10.29	8.69	8.65	8.03
	(16.71)	(11.72)	(11.70)	(10.39)
Recruited Athlete	1.71**	2.13***	2.12***	1.93***
	(0.38)	(0.49)	(0.50)	(0.47)
Physical GPA	3.05***	2.17***	2.18***	2.08***
	(0.70)	(0.54)	(0.55)	(0.52)
Deployed Years (as of year 14)	1.73***	1.74***	1.73***	1.74***
	(0.15)	(0.15)	(0.15)	(0.15)
1-Year Prep School	0.64*	0.61*	0.60*	0.61*
	(0.17)	(0.16)	(0.17)	(0.17)
Military Dev. GPA		3.91***	3.93***	3.64***
		(1.18)	(1.24)	(1.15)
Academic GPA			0.99	1.26
			(0.25)	(0.36)
SAT Score				0.83*
				(0.09)
Constant	0.00***	0.00***	0.00***	0.00***
	(0.00)	(0.00)	(0.00)	(0.00)
Correctly classified	89.18%	89.18%	89.18%	89.16%
Incremental χ^2	-	20.46***	0.00	3.52*
Pseudo R^2	0.101	0.120	0.120	0.123
# Obs (N)	1,562	1,562	1,562	1,559

* p≤0.10, **p≤0.05, and ***p≤0.01

-All models are controlled for *Class Year* and *Army Branch* (function). The β-values are all in logistic/odds-ratio format, which is based around 1.0. A number below one is negatively predictive, and a number above one is positively predictive. Robust standard errors are listed below each β value in (parentheses). Correctly classified is a goodness of fit test for the entire model from STATA 12.1 [estat classification, cutoff (.06)], showing the percentage of time that model would accurately predict the correct outcome. Incremental χ^2 is the likelihood-ratio test that the added explanatory or control variables add independently to the previously specified model. Specifically, it tests if H_0: independent variable 1 = independent variable 2 = … = 0. *Native American* predicts failure (non-selection for battalion command) perfectly and is dropped by the logistic regression

[30] Equation (4) was also tested using OLS regression and the results were robust to the logit specifications. This test included standardized coefficients (STATA's beta command) in order to have comparable coefficients that would confirm the order of the most impactful explanatory variables. The standardized OLS results included 1-Year *Prep School* (β= -0.04, p≤0.047), *Military Development GPA* (β=0.11, p≤0.001), *Academic GPA* (β=0.02, p≤0.44), and *SAT Score* (β= -0.01, p≤0.11).

Table 4c: Logistic (logit) regression, dependent variable: *Selection for battalion command* [31]

	(1)	(2)	(3)	(4)
Female	1.05	1.07	0.99	0.99
	(0.33)	(0.33)	(0.31)	(0.32)
African-American	1.11	1.22	1.05	0.90
	(0.34)	(0.38)	(0.33)	(0.28)
Hispanic-American	1.01	1.09	1.01	0.90
	(0.38)	(0.42)	(0.39)	(0.36)
Asian-American	0.76	0.83	0.84	0.92
	(0.28)	(0.32)	(0.33)	(0.37)
Native-American	0.60	0.77	0.74	0.66
	(0.61)	(0.77)	(0.70)	(0.62)
Other minority				
Recruited Athlete	1.49*	1.71**	1.47*	1.21
	(0.32)	(0.37)	(0.32)	(0.28)
Physical GPA	2.20***	1.73***	1.91***	1.77***
	(0.43)	(0.35)	(0.39)	(0.36)
Deployed Years (as of year 14)	1.64***	1.63***	1.60***	1.63***
	(0.13)	(0.13)	(0.13)	(0.13)
1-Year Prep School	0.68*	0.65**	0.57***	0.60**
	(0.14)	(0.14)	(0.12)	(0.13)
Military Dev. GPA		2.84***	3.89***	3.44***
		(0.73)	(1.12)	(1.00)
Academic GPA			0.52***	0.80
			(0.11)	(0.19)
SAT Score				0.71***
				(0.06)
Constant	0.04***	0.00***	0.01***	0.22
	(0.02)	(0.00)	(0.00)	(0.30)
Correctly classified	77.09%	77.24%	77.79%	77.97%
Incremental χ^2	3.46*	16.69***	9.34***	16.50***
Pseudo R^2	0.163	0.175	0.181	0.193
# Obs (N)	1,292	1,292	1,292	1,289

* p≤0.10, **p≤0.05, and ***p≤0.01

-All models are controlled for *Class Year* and *Army Branch* (function). The β-values are all in logistic/odds-ratio format, which is based around 1.0. A number below one is negatively predictive, and a number above one is positively predictive. Robust standard errors are listed below each β value in (parentheses). Correctly classified is a goodness of fit test for the entire model from STATA 12.1 [estat classification, cutoff (.06)], showing the percentage of time that model would accurately predict the correct outcome. Incremental χ^2 is the likelihood-ratio test that the added explanatory or control variables add independently to the previously specified model. Specifically, it tests if H_0: independent variable 1 = independent variable 2 = … = 0. *Other Minority* predicts failure (non-selection for battalion command) perfectly and is dropped by the logistic regression.

[31] Equation (4) was also tested using OLS regression and the results were robust to the logit specifications. This test included standardized coefficients (STATA's beta command) in order to have comparable coefficients that would confirm the order of the most impactful explanatory variables. The standardized OLS results included 1-Year *Prep School* (β= -0.08, p≤0.03), *Military Development GPA* (β=0.18, p≤0.001), *Academic GPA* (β= -0.03, p≤0.32), and *SAT Score* (β= -0.04, p≤0.001).

Table 5a: Logistic (logit) comparisons of the full regression models for the three dependent variables

Model	(from Table 4a, model 5)	(from Table 4b, model 5)	(from Table 4c, model 5)
	Early Promotion to Major (if considered for promotion)	Early Promotion to Lieutenant Colonel (if considered for promotion)	Selection for Battalion Command (if considered for promotion)
	7-9 years later	14-16 years later	14-18 years later
Female	1.07	1.57	0.99
	(0.19)	(0.61)	(0.32)
African-American	0.76	1.28	0.90
	(0.18)	(0.45)	(0.28)
Hispanic-American	0.84	1.12	0.90
	(0.24)	(0.51)	(0.36)
Asian-American	1.25	0.34*	0.92
	(0.26)	(0.21)	(0.37)
Native-American	0.66		0.66
	(0.43)		(0.62)
Other minority	1.22	8.03	
	(0.48)	(10.39)	
Recruited Athlete	1.37**	1.93***	1.21
	(0.19)	(0.47)	(0.28)
Physical GPA	1.55***	2.08***	1.77***
	(0.22)	(0.52)	(0.36)
Deployed Years (as of year 7 or 14)	1.04***	1.05***	1.04***
	(0.01)	(0.01)	(0.01)
1-Year Prep School	0.59***	0.61*	0.60**
	(0.09)	(0.17)	(0.13)
Military Dev. GPA	6.76***	3.64***	3.44***
	(1.23)	(1.15)	(1.00)
Academic GPA	1.63***	1.26	0.80
	(0.23)	(0.36)	(0.19)
SAT Score	0.73***	0.83*	0.71***
	(0.04)	(0.09)	(0.06)
Constant	0.00***	0.00***	0.22
	(0.00)	(0.00)	(0.30)
Correctly classified	89.79%	89.16%	77.97%
Pseudo R^2	0.128	0.123	0.192
# Obs (N)	5,505	1,559	1,289

* $p \leq 0.10$, ** $p \leq 0.05$, and *** $p \leq 0.01$

-All models are controlled for *Class Year* and *Army Branch* (function). The β-values are all in logistic/odds-ratio format, which is based around 1.0. A number below one is negatively predictive, and a number above one is positively predictive. Robust standard errors are listed below each β value in (parentheses). Correctly classified is a goodness of fit test for the entire model from STATA 12.1 [estat classification, cutoff (.06)], showing the percentage of time that model would accurately predict the correct outcome.

Table 5b: Logistic (logit) comparisons of full regression models (with standardized variables)

Model	(from Table 4a, model 5)	(from Table 4b, model 5)	(from Table 4c, model 5)
	Early Promotion to Major (if considered for promotion)	Early Promotion to Lieutenant Colonel (if considered for promotion)	Selection for Battalion Command (if considered for promotion)
	7-9 years later	14-16 years later	14-18 years later
Female	1.07	1.57	0.99
	(0.19)	(0.61)	(0.32)
African-American	0.76	1.28	0.90
	(0.18)	(0.45)	(0.28)
Hispanic-American	0.84	1.12	0.90
	(0.24)	(0.51)	(0.36)
Asian-American	1.25	0.34*	0.92
	(0.26)	(0.21)	(0.37)
Native-American	0.66		0.66
	(0.43)		(0.62)
Other minority	1.22	8.03	
	(0.48)	(10.39)	
Recruited Athlete	1.37**	1.93***	1.21
	(0.19)	(0.47)	(0.28)
Physical GPA	1.20***	1.35***	1.27***
	(0.07)	(0.14)	(0.11)
Deployed Years (as of year 7 or 14)	1.47***	1.75***	1.63***
	(0.09)	(0.15)	(0.13)
1-Year Prep School	0.59***	0.61*	0.60**
	(0.09)	(0.17)	(0.13)
Military Dev. GPA	2.01***	1.60***	1.57***
	(0.13)	(0.19)	(0.17)
Academic GPA	1.26***	1.11	0.90
	(0.08)	(0.15)	(0.10)
SAT Score	0.71***	0.82*	0.68***
	(0.04)	(0.09)	(0.06)
Constant	0.05***	0.10***	0.71
	(0.01)	(0.04)	(0.19)
Correctly classified	89.79%	89.16%	77.97%
Pseudo R^2	0.128	0.123	0.192
# Obs (N)	5,505	1,559	1,289

* p≤0.10, **p≤0.05, and ***p≤0.01

-Correctly classified is a goodness of fit test for the entire model from STATA 12.1 [estat classification, cutoff (.06)], showing the percentage of time that model would accurately predict the correct outcome. All models are controlled for *Class Year* and *Army Branch* (function). The β-values are all in logistic/odds-ratio format, which is based around 1.0. A number below one is negatively predictive, and a number above one is positively predictive. Robust standard errors are listed below each β value in (parentheses). Table 5b represents the identical analysis as Table 5a, except all the continuous variables, *Physical GPA, Deployed Years, Military Development GPA, Academic GPA,* and *SAT Score* were all standardized (mean = 0 and standard deviation = 1), to allow comparisons of magnitude between explanatory variables.

Analysis

Analyses of Hypotheses 1, 2, & 3[32]

The following results are summarized on Table 5a. In examining the predictive power of a West Pointer's *SAT Score*, I find that a one-unit increase in a West Pointer's SAT Score (for example, going from a *SAT Score* of 1,270 to 1,370) predicts a 27 percent ($p \leq 0.01$) decreased odds of being selected for *Early promotion to major*. The results of the *Early promotion to lieutenant colonel* model demonstrate that a one-unit increase in *SAT Score* predicts a 17 percent ($p \leq 0.10$) decreased odds of being selected for *Early promotion to lieutenant colonel* (although the results are weakly significant). Finally, a one-unit increase in *SAT Score* predicts at 29 percent ($p \leq 0.01$) decreased odds of being selected for *Battalion command*. Therefore, Hypothesis 1, that *SAT Score* positively predict performance, is unsupported for all three performance events, and the opposite effects are observed at each.[33]

Per Hypothesis 2, I evaluated the predictive power of a West Pointer's cumulative *Academic GPA* and found that a one-unit increase in a West Pointer's *Academic GPA* (for example, going from a below-average 2.4 cumulative *Academic GPA* to an above-average 3.4 *Academic GPA*), predicts a 63 percent ($p \leq 0.01$) increased odds of being selected for *Early promotion to major*. Examining the results of the *Early promotion to lieutenant colonel* model, a one-unit increase in *Academic GPA* predicts a 26 percent increased odds of being selected for *Early promotion to lieutenant colonel* (results are not strongly significant). Finally, a one-unit increase in *Academic GPA* predicts at 20 percent decreased odds of being selected for *Battalion command*, however, this result is not statistically significant. Therefore, Hypothesis

[32] The findings of each individual control variable's predictive power discussed throughout this paper are only valid under the assumption of "all else is equal". In other words, that all of the other independent variables (both explanatory and control) are held constant and at their means, and that the predictions represent what would be the average result of many samples.
[33] The standard deviation for *SAT Score* is 1.04. Therefore, a one-unit change in *SAT Score* (going from 1,270 to 1,370) is approximately equal to a change of one standard deviations.

2, that *Academic GPA* positively predicts performance, is supported for *Early promotion to major*, but is not supported for the other two performance events.[34]

In examining the predictive power of a West Pointer's cumulative *Military GPA*, I find that a one-unit increase in a West Pointer's *Military GPA* (for example, going from a below-average 2.5 cumulative *Military GPA* to an above-average 3.5 *Military GPA*), predicts a 576 percent ($p \leq 0.01$) increased odds of being selected for *Early promotion to major*. Examining the results of the *Early promotion to lieutenant colonel* model, a one-unit increase in *Military GPA* predicts a 264 percent ($p \leq 0.001$) increased odds of being selected for *Early promotion to lieutenant colonel*. Finally, a one-unit increase in *Military GPA* predicts at 244 percent increased odds of being selected for *Battalion command*. Therefore, Hypothesis 3, that *Military GPA* positively predicts performance, is strongly supported at all three performance events.[35]

Lastly, in assessing whether or not *Academic GPA*, *Military Development GPA*, or *SAT Score* have non-linear predictive power, I removed *Academic GPA*, *Military Development GPA*, and *SAT Score* from Equation 1 and replacing each of them with two explanatory continuous variables. The first replacement variable is the difference between the officers' individual scores and the mean score for their class, which I call their centered score. The second replacement variable is the square of the centered score, which I call their centered score squared. For example, the mean *Academic GPA* for the West Point's Class of 1997 is 2.96. If several West Pointers from the Class of 1997 earned *Academic GPAs* of 3.20, each of their *Academic GPA centered* scores = (2.96 - 3.20) = -0.24, and each of their *Academic GPA centered squared* scores = (-0.24 * -0.24) = 0.576.

Testing the modified version of Equations 1, resulted in the following. For *Early promotion to major*, the only explanatory variable that reflects non-linear effects is Academic GPA ($\beta_{Academic\ GPA\_centered}$=

[34] The standard deviation for *Academic GPA* is 0.44. Therefore, a one-unit change in *Academic GPA* (going from 2.4 to a 3.4) is approximately equal to a change of two standard deviations. I chose to leave the units of GPA in the 4.0-scale format for practical interpretation reasons.

[35] The standard deviation for *Military Development GPA* is 0.34. Therefore, a one-unit change in *Military Development GPA* (going from 2.4 to a 3.4) is approximately equal to a change of three standard deviations. I chose to leave the units of GPA in the 4.0-scale format for practical interpretation reasons.

1.87, $p \leq 0.001$; and $\beta_{Academic\ GPA\_centered\_squared} = 0.61$, $p \leq 0.23$).[36] Since the β-coefficients are both statistically significant, but on different sides of 1.0 (i.e. one predicts positive effects, and one predicts negative effects), this is evidence that the per-unit marginal effects of *Academic GPA* decreases as *Academic GPA* gets further from the mean.

This non-linearity effects test was repeated for both the *Early promotion to lieutenant colonel* analysis (Equation 2) and selection for *Battalion command* analysis (Equation 3). Neither analysis provided enough evidence to claim that any of the three explanatory variables displayed non-linear predictive effects for *Early promotion to lieutenant colonel* or *Battalion command*.

It should be noted that, although they were classified as control variables, neither gender nor ethnicity are significant predictors (at the $p \leq 0.05$ level) in any of the three fully-specific performance models (see Table 5a).

Testing the Superstar Hypotheses (Hypotheses 4, 5, & 6)

Hypothesis 4 predicts that West Pointers who were in the top one-third of their class in both academics (*Academic GPA*) and cadet job ratings (*Military Development GPA*) will be the most likely to be promoted early. Multiple predictors are shown to have stronger validity than single predictors when predicting performance. For example, the combination of an employees' general mental ability and their performance on a work sample test have been shown to have the second highest multivariate validity and utility for predicting job performance (Schmidt & Hunter, 1998). Since mental ability can be operationalized by academic performance (Pearce, 2009), and work sample tests can be operationalized by four years of cadet jobs evaluations, West Pointers' performance in both *Academic GPA* and *Military Development GPA* may be the stronger predictors of job performance than either one individually.

[36] To be able to claim a variable has non-linear effects, the *centered* variable and the *centered_squared* variable must both be statistically significant. With odds-ratios, if their β-coefficients have different directions (i.e. one less than 1.0 and one more than 1.0), the variable's effects are increased with numbers further from the mean. If they have the same direction (i.e. both below 1.0 or both above 1.0), the variable's' effect is decreased with numbers further from the mean.

It follows that if superstars are people who generally come out on top of all competitive activities in which they engage (Rosen, 1981), then a cadet who simultaneously dominates West Point's most comprehensive grading events, *Academic GPA* and *Military Development GPA*, should be more likely to be promoted early to major than their classmates. To complete this analysis, nine categories (i.e. "types") of cadet performers were created and defined. Though there is no standard percentage the Army uses across all domains to identify a high-performer relative to their peer groups (i.e., the top 49 percent and top 20 percent are frequently used to identify high performers in existing Army personnel systems). For example, at most Army training schools/courses (see Table 1 for examples), the top 20 percent of performers are typically awarded an "honor graduate" designation. In the U.S. Army's officer evaluation report system used from 1997-2012, the highest possible rating (an "above center of mass") could only be given to 49 percent or fewer recipients. Therefore, an approximate mid-point of these two lines was selected: approximately 33.3 percent, which is best representative of what the Army considers high performance relative to their peers. Using the 33.3 percent rule to categorize cadet performers, I defined nine categories determined by the combination of two identifiers designated *Scholar* and *Leader*. Scholar 1, 2, & 3 represents the bottom-third, middle-third, and top-third performers, respectively, of their classes in *Academic GPA*. Likewise, Leader 1, 2, & 3 represents the cadets in the bottom-third, middle-third, and top-third performers, respectively, of their classes in *Military Development GPA.*

Table 6: Cadet Types, from Superstars to Average performers

	Leader 1 (bottom 1/3)	Leader 2 (middle 1/3)	Leader 3 (top 1/3)
Scholar 3 (top 1/3)	?	?	*Superstar*
Scholar 2 (middle 1/3)	?	*Average performer*	?
Scholar 1 (bottom 1/3)	*Under-performer*	?	?

-Scholar= *Academic GPA* performance relative to their classmates
-Leader = *Military Development GPA* performance relative to their classmates
-Percentages of each cadet type out of the total population include: Scholar1_Leader1=18.3%, Scholar1_Leader2=10.2%, Scholar1_Leader3=4.8%, Scholar2_Leader1=10.4%, Scholar2_Leader2=12.73%, Scholar2_Leader3=10.25%, Scholar3_Leader1=4.74%, Scholar3_Leader2=10.37%, and Scholar3_Leader3=18.15%.

Identifiers are combined to make nine categories of *Cadet Superstar Types*, of which I created a dummy variable for each (see Table 6). *Cadet Performance Types* are defined as a 1 if the cadets' performance matched that category and a 0 if their performance did not. The following logistic (logit odds ratio) model specifications (based off of Equations 1/2/3, respectively) was then applied. The results are reported in Table 7.

Equation 4/5/6:

Logistic (likelihood of early promotion to major/lieutenant colonel/battalion command) = α + (β_1 … β_9 x the Cadet Performance Type dummies) + (β_{10} x SAT Score) + (β_{11} x Military Development GPA) + (β_{12} x Physical GPA) + (β_{13} x Prep School dummy) + (β_{14} x Recruited Athlete dummy) + (β_{15} x Female dummy) + (β_{16} x African American dummy) + (β_{17} x Hispanic American dummy) + (β_{18} x Asian American dummy) + (β_{19} x Native American dummy), + (β_{20} x Other Minority dummy) +(β_{21} x Deployed Years [7/14/14 years]) + (B_{22} … B_{38} x Military Branch dummies) +(B_{38}… B_{50} x Graduation Year dummies) + ε.

Table 7: All cadets: Superstar cadet performance and officer performance

Early Promote to MAJ	Leader 1	Leader 2	Leader 3
Scholar 3	0.48**	0.93	1.89***
	(0.16)	(0.19)	(0.30)
Scholar 2	0.55**	1	1.69***
	(0.14)	(0)	(0.29)
Scholar 1	0.39***	0.71*	1.17
	(0.09)	(0.15)	(0.25)

Early Promote to LTC	Leader 1	Leader 2	Leader 3
Scholar 3	0.25*	0.94	1.33
	(0.19)	(0.36)	(0.39)
Scholar 2	0.17***	1	1.03
	(0.11)	(0)	(0.34)
Scholar 1	0.65	0.77	0.69
	(0.23)	(0.27)	(0.31)

Select for Bn Cmd	Leader 1	Leader 2	Leader 3
Scholar 3	0.18**	0.61	0.74
	(0.13)	(0.20)	(0.19)
Scholar 2	0.50*	1	1.09
	(0.18)	(0)	(0.30)
Scholar 1	0.51**	0.83	1.40
	(0.16)	(0.25)	(0.48)

* p≤ 0.10, **p≤0.05, and ***p≤ 0.01

-The β-values are all in logistic/odds-ratio format, which is based around 1.0. A number below one is negatively predictive, and a number above one is positively predictive. Robust standard errors are listed below each β value in (parentheses). The following variables were included in the regressions but not presented in the table for brevity's sake: *Physical GPA*, *SAT Score*, *Prep-school*, *Recruited athlete*, *Female*, ethnicity dummies, *Grad year*, and military branch dummies. *Superstars* are defined as both Scholar 3 & Leader 3, and *Underperformers* are both Scholar 1 and Leader 1. This table is the result of three separate regressions. For early promote to major, $\beta_{Constant}$= 0.0048, p≤0.001, N=5,510. For early promote to lieutenant colonel $\beta_{Constant}$= 0.0048, p≤0.001, N=1,562, and for selection for battalion command $\beta_{Constant}$= 0.058, p≤0.001, N=1,292. *Average-performer* (*Scholar2_Leader2*) is the reference group for each regression, and has a β=1.0 and a standard error =0.

Testing Hypothesis 4, cadet *superstars* (those who graduate in the top third of their class in both *Academic GPA* and *Military Development GPA*) are predicted to have a 89 percent increased odds of being selected for *Early promotion to major* (β=1.89, p≤0.01) than average performing cadets, though a statistically significant effect is not observed at either of the subsequent two performance events. Therefore, Hypothesis 4, that superstar West Pointers, those who perform in the top one-third of their

class in both *Academic GPA* and *Military GPA,* are more likely to be designated as high-performing officers, is supported for the first performance event only. Also of note, cadets who are *underperformers* (Scholar 1 and Leader 1) appear to have been penalized with a 61 percent lower odds (β=0.39, $p \leq 0.01$) of being selected for *Early promotion to major,* and a 49 percent lower odds (β=0.51, $p \leq 0.05$) of being selected for *Battalion command*.

Next, to test Hypotheses 5 and 6, the performance effects of being a female or minority West Point officer, I started with Equations 4/5/6, then added two interactive variables to each: one for each of the nine cadet types (e.g. *Scholar1_Leader1_Female … Scholar 3_Leader3_Minority).* These additional eighteen interactive dummy variables were designed to provide insight on the additional likelihoods of being a *Female* or a *Minority* on each of the nine cadet performance types' likelihoods of being selected for early promotion or battalion command. I also remove Equation 4/5/6's gender and ethnic dummy variables, as those two demographics will be accounted for by the eighteen interactive terms. This leads to:

Equation 7/8/9:

Logistic (likelihood of Early promotion to major/lieutenant colonel/battalion command) $= \alpha +$ $(\beta_1 \ldots \beta_9$ *x the Cadet Performance Type dummies)* $+ (\beta_{10} \ldots \beta_{18}$ *x the Cadet Performance Type Dummies_Female)* $+ (\beta_{19} \ldots \beta_{27}$ *x the Cadet Performance Type Dummies_Minority)* $+ (\beta_{28}$ *x SAT Score)* $+ (\beta_{29}$ *x Military Development GPA)* $+ (\beta_{30}$ *x Physical GPA)* $+ (\beta_{31}$ *x Prep School dummy)* $+ (\beta_{32}$ *x Recruited Athlete dummy)* $+ (\beta_{33}$ *x Deployed Years [7 years])* $+ (B_{34} \ldots B_{50}$ *x Military Branch dummies)* $+(B_{51} \ldots B_{63}$ *x Graduation Year dummies)* $+ \varepsilon$

Table 8: Cadet Types' main effects and interactions (*Early promotion to major*)

Main Effects	Leader 1	Leader 2	Leader 3
Scholar 3	0.47*	1.19	2.28***
	(0.19)	(0.27)	(0.42)
Scholar 2	0.65	1.00	1.85***
	(0.18)	(0.00)	(0.38)
Scholar 1	0.36***	0.79	1.36
	(0.11)	(0.20)	(0.34)

Plus Female Interactions	Leader 1	Leader 2	Leader 3
Scholar 3	0.85	1.10	0.51**
	(0.94)	(0.63)	(0.17)
Scholar 2	1.71	1.78	1.02
	(1.01)	(0.64)	(0.37)
Scholar 1	4.46***	0.57	0.87
	(1.84)	(0.32)	(0.58)

Plus Minority Interactions	Leader 1	Leader 2	Leader 3
Scholar 3	2.26	0.34*	1.06
	(1.63)	(0.21)	(0.29)
Scholar 2	0.56	1.36	1.32
	(0.32)	(0.48)	(0.41)
Scholar 1	0.70	1.44	0.98
	(0.30)	(0.54)	(0.45)

* p≤0.10, **p≤0.05, and ***p≤0.01

-The β-values are all in logistic/odds-ratio format, which is based around 1.0. A number below one is negatively predictive, and a number above one is positively predictive. Robust standard errors are listed below each β value in (parentheses). The following variables were included in the regressions but not presented in the table for brevity's sake: *Physical GPA*, *SAT Score*, *Prep-school*, *Recruited athlete*, *Grad year*, and military branch dummies. This entire table is the result of one regression with a $\beta_{Constant}$= 0.039 p≤0.001, N=5,510. *Average-performer* (*Scholar2_Leader2*) is the reference group, and has a β=1.0 and a standard error =0.

Table 9: Cadet Types' main effects and interactions (*Early promotion to lieutenant colonel*)

ALL main effects	Leader 1	Leader 2	Leader 3
Scholar 3	0.30	0.67	1.16
	(0.23)	(0.30)	(0.37)
Scholar 2	0.13**	1.00	1.07
	(0.10)	(0.00)	(0.37)
Scholar 1	0.48*	0.87	0.61
	(0.21)	(0.33)	(0.30)

Plus Female Interactions	Leader 1	Leader 2	Leader 3
Scholar 3	predicts failure perfectly	4.82*	2.43
		(4.24)	(1.39)
Scholar 2	9.00	0.56	0.71
	(12.19)	(0.58)	(0.94)
Scholar 1	1.34	0.40	predicts failure perfectly
	(1.12)	(0.29)	

Plus Minorities Interactions	Leader 1	Leader 2	Leader 3
Scholar 3	predicts failure perfectly	1.14	0.65
		(0.94)	(0.43)
Scholar 2	predicts failure perfectly	0.84	0.56
		(0.55)	(0.52)
Scholar 1	1.94	0.78	1.18
	(1.07)	(0.54)	(1.06)

* p≤0.10, **p≤0.05, and ***p≤0.01

The β-values are all in logistic/odds-ratio format, which is based around 1.0. A number below one is negatively predictive, and a number above one is positively predictive. Robust standard errors are listed below each β value in (parentheses). The following variables were included in the regressions but not presented in the table for brevity's sake: *Physical GPA*, *SAT Score*, *Prep-school*, *Recruited athlete*, *Grad year*, and military branch dummies. This entire table is the result of one regression with a $\beta_{Constant}$= 0.01, p≤0.001, N=1,527. *Average-performer* (*Scholar2_Leader2*) is the reference group, and has a β=1.0 and a standard error =0.

Table 10: Cadet Types' main effects and interactions (*Selection for battalion command*)

ALL main effects	Leader 1	Leader 2	Leader 3
Scholar 3	0.10***	0.51*	0.64
	(0.08)	(0.18)	(0.18)
Scholar 2	0.52*	1.00	1.12
	(0.20)	(0.00)	(0.34)
Scholar 1	0.35***	0.92	1.22
	(0.14)	(0.30)	(0.46)

Plus Female Interactions	Leader 1	Leader 2	Leader 3
Scholar 3	5.71	2.34	1.19
	(11.28)	(2.59)	(0.73)
Scholar 2	0.63	0.74	0.40
	(0.91)	(0.55)	(0.43)
Scholar 1	2.39	0.49	predicts failure perfectly
	(1.34)	(0.36)	

Plus Minorities Interactions	Leader 1	Leader 2	Leader 3
Scholar 3	2.18	1.32	2.21
	(4.59)	(0.91)	(1.41)
Scholar 2	0.39	0.64	0.50
	(0.45)	(0.39)	(0.33)
Scholar 1	1.56	0.51	1.21
	(0.73)	(0.29)	(0.75)

* p≤0.10, **p≤0.05, and ***p≤0.01

The β-values are all in logistic/odds-ratio format, which is based around 1.0. A number below one is negatively predictive, and a number above one is positively predictive. Robust standard errors are listed below each β value in (parentheses). The following variables were included in the regressions but not presented in the table for brevity's sake: *Physical GPA*, *SAT Score*, *Prep-school*, *Recruited athlete*, *Grad year*, and military branch dummies. This entire table is the result of one regression with a $\beta_{Constant}$ = 0.06, p≤0.001, N=1,293. *Average-performer* (*Scholar2_Leader2*) is the reference group, and has a β=1.0 and a standard error =0.

It is important to note that the interaction coefficients in Tables 8, 9, & 10, the effects of being *Female* or a *Minority*, are all relative to their respective reference groups (average performing West Pointers), and additive to each of their respective the main effects.

First, I examine the additional effects of being *Female* on superstar West Pointers. Table 8 shows that, when compared to men, and in the context of the *Early promotion to major*, superstar West Point females have glass ceilings (β=0.51, p≤0.05), and under-performing females have higher floors (β=4.46, p≤0.001). Next, Table 9 examines the same in the context later in their career, and specifically when being selected for *Early promotion to lieutenant colonel*. The data provides evidence that the additional superstar effect for West Point females may flip and become positive (β=2.43, p≤0.12) while the higher floor for *Female* underperformers persists (β=1.34, p≤0.72), though both of these results are correlational and not statistically significant. Finally, Table 10 shows that female West Point superstars, when compared to male West Point superstars, may be significantly rewarded when considered for battalion command (β=1.19, p≤0.75), while underperforming women retain a higher floor than their male West Point counterparts (β=2.39, p≤0.20). Again, these results are also only correlational and not statistically significant.

Therefore, Hypothesis 5, that *female* West Point superstars experience less positive effects than male West Point superstars, is supported at the *Early promotion to major* selection board, but not at the two later performance events.

Next, I examine the performance effects of being a *Minority* on superstar West Pointers. With regards to the *Early promotion to major*, when compared to superstar West Point Caucasian officers, superstar West Point *Minority* officers are not treated differently (β=1.06, p≤0.83), but under-performing *Minorities* may be punished more severely (β=0.70, p≤0.40), though neither of these results are statistically significant (see Table 9). The data in Table 10 reports the same in the context of being selected for an *Early promotion to lieutenant colonel*, and the data provides evidence that the additional superstar effect for West Point *Minorities* flips from neutral earlier in their careers, and becomes negative later in their careers (β=0.65, p≤0.52). Additionally, at this point, there may be a higher floor for *Minority* underperformers (β=1.94, p≤0.22), though both of these results are correlational and not statistically significant. Minority West Point superstars, when compared to Caucasian West Point superstars, may be significantly rewarded when considered for battalion command (β=1.19, p≤0.75), while underperforming minorities retain a higher floor than their Caucasian West Point counterparts (β=2.39, p≤0.20), though both of these results are also only correlational and not statistically significant (see Table 13).

Therefore, Hypothesis 6, that *Minority* West Point superstars experience different effects than Caucasian West Point superstars, is not supported.

Re-testing the Superstar Hypothesis 4, but with SAT Score (Cognitive Ability) as the Lens

Earlier, Hypotheses 4, 5, and 6 were analyzed by implicitly defining the Best and Brightest (superstar) cadets as those in the top one-third of their classes in both *Military Development GPA* and *Academic GPA*. In total, these cadets account for 18 percent of the 12,035 West Pointers. The Best and Brightest officers, using *SAT Score* as the lens for brightest, account for 12 percent of the officers. Nine

percent of West Pointers are consider Best and Brightest regardless of whether one uses and *Academic GPA* or *SAT Score* lens.

To see if the analysis changed with different superstar lenses, I retested Hypothesis 4 was retested using *SAT Score* in the place of *Academic GPA.*

Table 11: Brightest: Academic GPA vs. SAT Score (*Early promotion to major*)

Acad GPA	Best 1	Best 2	Best 3
Bright 3	0.48**	0.93	1.89***
	(0.16)	(0.19)	(0.30)
Bright 2	0.55**	1	1.69***
	(0.14)	0	(0.29)
Bright 1	0.39***	0.71*	1.17
	(0.09)	(0.15)	(0.25)

SAT Score	Best 1	Best 2	Best 3
Bright 3	0.34***	0.82	1.41*
	(0.11)	(0.18)	(0.26)
Bright 2	0.42***	1.00	1.97***
	(0.12)	(0.00)	(0.36)
Bright 1	0.83	1.21	2.48***
	(0.19)	(0.24)	(0.46)

* p≤ 0.10, **p≤0.05, and ***p≤0.01

-This table is the result of two separate regressions. For the Academic GPA lens, $\beta_{Constant}$= 0.00, p≤0.001, N=5,510. For the SAT Score lens, $\beta_{Constant}$= 0.00, p≤0.001, N=5,510.

The results of the two separate regression analyses in Table 11 show that the conclusions have some similarities, as well as some substantial differences, based on the lens used. For similarities, Best 1 (defined as the West Pointers in the bottom one-third of their class in *Military Development GPA*) are generally punished, regardless of brightness, though the magnitude of punishment decreases with increasing Academic GPA (academic performance), while the magnitude of punishment increases with increasing SAT Score (cognitive ability). Perhaps the most notable difference is in the Best 3 categories, as both lenses predict positive effects. Yet the *Academic GPA* (brightness) appears to be a positive moderator of performance in the three increasing categories of brightness (β=1.17, β=1.69***, and β=1.89***), while the *SAT Score* as brightness appears to be a negative moderator of performance in the three increasing categories of brightness (β=2.48***, β=1.97***, and β=1.41*).

Table 12: Brightest: Academic GPA vs. SAT Score (*Early promotion to lieutenant colonel*)

Acad GPA	Best 1	Best 2	Best 3	SAT Score	Best 1	Best 2	Best 3
Bright 3	0.25*	0.94	1.33	Bright 3	0.37*	0.99	1.17
	(0.19)	(0.36)	(0.39)		(0.21)	(0.40)	(0.42)
Bright 2	0.17***	1	1.03	Bright 2	0.42*	1.00	1.53
	(0.11)	0	(0.34)		(0.22)	(0.00)	(0.54)
Bright 1	0.65	0.77	0.69	Bright 1	0.79	1.29	1.41
	(0.23)	(0.27)	(0.31)		(0.32)	(0.46)	(0.50)

* p≤0.10, **p≤0.05, and ***p≤0.01
-This table is the result of two separate regressions. For the Academic GPA lens, $\beta_{Constant}$= 0.00, p≤0.001, N=1,562. For the SAT Score lens, $\beta_{Constant}$= 0.00, p≤0.001, N=1,559.

The results of the *Early promotion to lieutenant colonel* event in Table 12 also shows a punishment for Best 1 in most categories, though both *Academic GPA* and *SAT Score* appear to both be negative moderators of performance in the three increasing categories of brightness.

Table 13: Brightest: Academic GPA vs. SAT Score (*Selection for battalion command*)

Acad GPA	Best 1	Best 2	Best 3	SAT Score	Best 1	Best 2	Best 3
Bright 3	0.18**	0.61	0.74	Bright 3	0.21***	0.75	0.80
	(0.13)	(0.20)	(0.19)		(0.10)	(0.24)	(0.24)
Bright 2	0.50*	1	1.09	Bright 2	0.69	1.00	1.09
	(0.18)	0	(0.30)		(0.26)	(0.00)	(0.32)
Bright 1	0.51**	0.83	1.40	Bright 1	1.08	1.60	2.37***
	(0.16)	(0.25)	(0.48)		(0.37)	(0.48)	(0.71)

* p≤0.10, **p≤0.05, and ***p≤0.01
-This table is the result of two separate regressions. For the Academic GPA lens, $\beta_{Constant}$= 0.06, p≤0.001, N=1,292. For the SAT Score lens, $\beta_{Constant}$= 0.05, p≤0.001, N=1,289.

The results of the *Selection for battalion command* event in Table 13 also shows a punishment for Best 1 in most categories, though both *Academic GPA* and *SAT Score* appear to both be negative moderators of performance in the three increasing categories of brightness. By examining Best 3 through both intellectual lenses, the best and brightest may be less likely that the average officers to be selected for command, though the results are not statistically significant (*Academic GPA*, p≤0.11; *SAT Score*, p≤0.68). The overall trend for *Selection for battalion command* observed is that regardless of whether the *Academic GPA* or *SAT Score* lens is used to operationalize "brightest," the brighter a West Pointer is, the less likely they are to be selected for command.

Discussion

This investigation finds that intellectual and early performance factors while at West Point are valid, yet nuanced, predictors of *Early promotion to major*, *Early promotion to lieutenant colonel*, and *Selection for battalion command*. To summarize: Cognitive ability (*SAT Score*) negatively predicts early promotions and selection for command (leadership performance), while academic performance (*Academic GPA*) and internship performance ratings that are force-distributed (*Military Development GPA*) predict leadership performance on both early promotion and selection for command. In addition, being a superstar (HI-PO, "best and brightest") predicts future performance, though female superstars receive lower leadership performance rewards than their male colleagues who are also superstars. Finally, minority superstars predict equivalent leadership performance rewards as Caucasian superstars.

The analysis shows that *SAT Score*, a variable that is partially informed by intelligence, negatively predicts a cadet will, seven to seventeen years later, be identified as a high-potential officer in the U.S. Army. This is especially salient when considering cognitive ability's negative predictive relationship on selection for battalion-level command, even though cognitive ability has been found to be the strongest predictor of success in high-complexity and managerial jobs. Several possibilities could explain this. First, brighter Army officers could be attracted to more technical military career fields, several of which have fewer battalion commands than combat arms career fields. Secondly, the Army's evaluation, selection, and promotion systems may punish officers with higher than average intelligences, and for a variety of reasons. First, people in positions of authority may be threatened by subordinates who have higher cognitive ability, and therefore, may block their bright subordinates' advancements to protect their own professional positions from encroachment or negative comparison. Secondly, Economist Albert Hirschman explained that an employee has two ways to resolve dissatisfaction, exit, or voice (1970). Since brighter employees may naturally generate more potentially novel and useful ways to solve problems, these employees may also be more inclined to speak up against the traditional or directed ways of doing things. This frequent voicing could be perceived as disloyal or insubordination by a

commanding officer. Indeed, loyalty is the first of the Seven Army Core Values, while personal courage, which may apply to speaking up, is the seventh (U.S.Army, 2013).

An expansion of this explanation of this unexpected phenomenon is seen when looking through the lens of conceptual level (CL), a personality variable related to cognitive ability that predicts a person's ability and desire to deal with cognitive complexity (Raphael, Moss, & Rosser, 1979). Research has shown that workers with low CL are as likely to perform as well as workers with a high CL when executing highly structured tasks, but are not as likely to perform as well when executing less structured, more ambiguous tasks (Amernic & Beechy, 1984).

One possibility is that Army junior officer job requirements are highly structured, requiring only a low CL, and a lot of motivation, to accomplish them well. Being a hierarchical and authority-based organization, the Army has very specific behavior norms for its junior officers. Many of the expectations for junior officers may be conformity-based, such as following the directions of superiors and adhering to a rigid culture, therefore their responsibilities are highly structured with little room or expectation for creativity, ambiguity, or thinking or acting in creative ways. If this were true, it could set an expectation early in one's Army career that the institution expects its leaders to follow rules, stay in highly-defined roles, and that they do not challenge/change the system (or your boss), and that leaders avoid causing conflict. Following this logic, the junior officers who perform low cognitive tasks better than their peers (such as earning the very high scores in physical fitness, equipment maintenance, marksmanship, and appearance), would stand to be rewarded with better evaluations, even if the peers have more of the traits and abilities needed by most senior leaders (general officers) to succeed at high cognitive-level tasks. In short, the Army may reward effort over ideas early in the officer promotion sequence, eliminating many officers who did not display enough work diligence to stay on the fast track as a junior and mid-grade officer, even though they may have epitomized the skills, abilities, and performance traits most needed by general officers leading huge efforts in complex environments. When organizations with hierarchical, internal labor markets use different evaluation criteria to promote and select their junior employees than the criteria they deemed necessary in their senior leaders, those organizations have *Criteria-Needs*

Mismatch (CNM). *Criteria-Needs Mismatch* is likely to result in the population just under the senior leader level (i.e., the possible successors for senior leadership) being a sub-optimal group since much of the best talent for senior leader ranks has been screened out of the system because they may not have met the most valued criteria for being a junior leader, even if that criteria has little to do with success as a senior leader.[37]

Assuming the Army, and most organizations, values intellectual ability, any cognitive-related CNM is likely unintentional. CNM may be the result of managers' biases towards rewarding traits and abilities that are readily observable over traits and abilities that are not. For example, a boss can evaluate a subordinate's basic motivation (diligence) by observing such things as hours worked, miles ran, number of project completed, reports turned in early, and on-target shots. On the other hand, it may be difficult for bosses to evaluate and compare their subordinates' unobservable traits and abilities, such as creativity and the ability to grasp complex concepts and vague scenarios, since most of their subordinates' responsibilities are only low cognitive level tasks. Therefore, the bias towards observable traits may explain the presence of CNM. Alternatively, it is possible that CNM may be intentional in some organizations.

Best and Brightest (potential Army anti-intellectualism)

The U.S. Army has long been accused of having an anti-intellectual bias. This culture may have historic roots in the classical and medieval times' debate between which type of person was held in the highest regards by the society: the *practical man* or the *contemplative man* (L. J. Matthews, 2005). Western military cultures reflected a dominant perspective in this debate, preferring the practical man in British and French military cultures of the 18th and 19th Centuries. Indeed, British Prime Minister Lloyd George observed that the "military mind … regards thinking as a form of mutiny," (Murray, 1990, p. 62) and a French author summarized that "excessive intellectualism might be a much a qualification for

[37] The *Criteria-Needs-Mismatch* (CNM) is a potential systematic explanation for the Peter Principle (Peter, Hull, & Frey, 1969), which posits that people are often promoted to a level at which they are incompetent.

premature retirement as illness, madness, or sloth" (Griffith, 1989, p. 91). This bias was often not subtle, as it was not just the civilians who noticed the military anti-intellectualism, but also the most senior officers themselves. French Marshal Marie E. P. Maurice de MacMahon said, "I eliminate from the promotion list any officer whose name I have read on the cover of a book" (De la Gorche, 1963, p. 9). Unfortunately for France, MacMahon later presided over their disastrous defeat by the Prussians at the Battle of Sedan in 1870, which resulted in 17,000 French casualties, the capture of Emperor Napoleon III, and the eventual loss of the war (Swain, 1970).

Since the U.S. Army's roots are in the French and British Armies, this anti-intellectual bias may have been adopted as well. As a young Army officer in 1920, future President Dwight Eisenhower was a mid-grade infantry officer who was threatened with courts-martial by the Chief of Infantry after he published an article on the promising future of tanks. Eisenhower recalled, "I was told my ideas were not only wrong but dangerous and that henceforth I would keep them to myself. Particularly, I was not to publish anything incompatible with solid infantry doctrine. If I did, I would be hauled before courts-martial" (J. E. Smith, 2012, p. 56).

Does this attitude persist in today's U.S. military? In 1994, RAND, non-profit global policy think tank, found an action preference among the Army's top uniformed leaders, as opposed to a contemplative preference (L. Matthews, 2002) For example, in 1997, Colonel Douglas MacGregor, PhD, authored a book arguing that the U.S. Army's heavy divisions were out of touch with the security landscape's actual need for lighter, more mobile formations (1997). McGregor was not selected for brigade command, was criticized by Army brass, and retired soon thereafter, yet five years later the Army ended up transforming itself much the way he suggested (L. Matthews, 2002). In 1998, West Point was criticized by a committee of former graduates from the Class of 1951, who, on their own accord, authored and widely-disseminated "white paper" on the state of the Academy and recommendations for its future policies. In essence, the report argued that West Point should favor practical-application over intellectual education. Two of its many arguments are particularly illustrative of the attitudes of the authors towards intellectualism in the Army.. First, it called for less theory based-academic courses and more military

training during the academic year, and, second, it urged West Point to stop sending cadets to Washington, D.C., for policy internships in the summers and to send them to additional muddy-boots troop unit summer assignments instead (Rockwell, 1998). In a 2002 examination of military culture, retired Colonel Lloyd Matthews examined whether or not this anti-intellectual bias in the U.S. Army officer corps had dissipated by the start of the 21st Century. Ultimately, he found that, "The answer, sadly, is no -- overt manifestations of anti-intellectualism still come right out and slap [the Army] in the face" (L. Matthews, 2002, pp. 1-2). Over ten years later, this anti-intellectualism bias (or, an institution that prefers its officers be their practical-selves over their contemplative-selves), shows signs of remaining dominant, which propagates two staunchly negative effects. The first is that intellectual officers are encouraged to, "bottle up their thoughts and ideas as a safety precaution until they reach the top and could put these ideas into practice. Unfortunately, the usual result, after years of repression for the sake of their ambition, was that when the bottle was eventually uncorked the contents had evaporated" (Hart & Basil Henry, 1972, p. 72). The second effect is that those officers who are open with their contemplative-selves are often shut down or run out by the Army's corporate anti-bodies. This is borne out by the 2011, 2012, and 2013 Army colonels promotion board, where having earned a PhD correlated with a decreased likelihood of promotion (Monroe, 2014).

Matthew's conclusion is supported by the recently retired chair of West Point's History Department, who provides several recent (up to 2008) examples of this ongoing debate as Athens (intellectual and character development) vs. Sparta (military training) (Betros, 2012). He found that the proponents for intellectual development (Athens) typically held the upper hand during peacetime, but the advocates for military training (Sparta) were often given exceptions during times of "wartime exigencies" (Betros, 2012, p. 238). Examples include West Point reducing the length of the academic year in favor of military training and in increasing athletic recruiting, at the cost of cognitive ability, in the 2000s (Betros, 2012).

A recent study that may provide evidence for the existence of an anti-intellectual bias in the Army found that military officers selected for senior (brigade-level) command has significantly lower Five Factor *openness* ratings than their peers who were not selected for senior command (Gerras & Wong, 2013). Openness is defined as "the recurrent need to enlarge and examine experience" (Robert R McCrae & Costa Jr, 1997, p. 167) and the study's authors operationalized openness as creativity, being comfortable with variety and novelty, having strong intellectual curiosity, and seeking out other views. People with high openness are comfortable debating others who hold differing perspectives, although people with lower openness tend to be more productive (Gerras & Wong, 2013). These high-openness traits such as intellectual curiosity and being comfortable with debate may have correlation with intellectual like traits (i.e. "brightest"), and the low-openness traits such as being resistant to change and compliant, which may have correlation with practical-based traits (i.e. "best") (Gerras & Wong, 2013).

Considering the data in study, the ability and propensity of West Point officers to be thinkers who are contemplative, deliberative, curious, intellectual, Athenian men and women may be predicted by their cognitive ability (*SAT Score*) or academic performance (*Academic GPA*). Cognitive ability may best measure intellectual ability, where academic performance may best measure propensity, though those two considerations are likely correlated.

Similarly, the ability and propensity of West Point officers to be operators who are practical, bold, action-focused, Spartan men and women may be predicted by their cadet military job motivation (*Military Development GPA*). The *Military Development GPA* is calculated primarily by ratings by their supervisors, and these are supposedly made independent of academic prowess. If an action-bias is present at the Army, it will likely be present at West Point, where it will be likely manifest itself through the assignment of the subjective *Military Development GPA.*

Therefore, the questions this paper seeks to answer also indirectly address the Athens vs. Sparta debate (if it is still raging in the Army) and who has the edge. Indeed, organizations' explicit and implicit evaluation criteria in the competition for limited resources often show their priorities and values. The selection for early promotions and battalion command are examples of how these priorities manifest

themselves. If the U.S. Army rewards *Military Development GPA* more than *Academic GPA* or *SAT Score*, the Army may have a pro-Athens bias. If they reward *Academic GPA* or *SAT Score* more than *Military Development GPA*, the Army may have a pro-Sparta bias.

Certainly, the two talents represented by Athens and Sparta are not measured on one sliding scale, but rather two independent scales. Likewise, no West Pointers show absolutely perfect talent in one category, and/or no talent in another. All officers have idiosyncratic bundles of talents, yet examining trends in what officer characteristics the U.S. Army's personnel policies currently favor helps organizations understand their present situations and helps them plan policy to ensure they attain their future goals.

Indeed, all organizations must make decisions based on the talent of their employees, and not making a deliberate decision about what constitutes an organizations' "best and brightest" is a decision to allow the current culture and priorities to perpetuate. An enlightening case of an organization doing deliberate talent programming is the pre-World War II German Army. The Chief of the Army High Command in the early 1930s, General Kurt von Hammerstein, was considered to be one of the best military minds of his day.[38] Hammerstein is credited with dividing his officers into four groups based on their intellectual prowess and drive (Breen, 2012). Non-diligent and low-intelligence officers were good at maintaining the status quo and best assigned routine tasks. Diligent officers with low-intelligence were potentially problematic, by creating work that wasn't necessarily in the best interest of the organization, and should be managed appropriately or separated. Diligent officers with high-intelligence were significant assets to organizations, but best fit for non-supervisory positions. Non-diligent officers with high-intelligence officers were determined to be best the best fit for command roles, because they possessed both the cognitive ability and the composure needed for complex decisions (Parrish, 2014). The origins for Hammerstein's four categories are likely from the 1853 German Chief of Staff Helmuth von Moltke (Verma, 2011; "What Kind of Leader are You?," 2012). Moltke, "a man of unusual vision and imagination," insisted that his subordinates be independent minded (Traxler, 1961, p. 112). This pro-

[38] He also opposed Hitler's rise to power, leading to his resignation in the early 1930's

intellectual perspective showed promise. Indeed, in the Battle of the Sedan, when opposed by anti-intellectual Marshal MacMahon, Moltke led the Prussians and Bavarians to a compelling victory.

Since West Pointers' *Military Development GPAs are* subjective measures that are correlated with hard work and conscientiousness, they also likely operationalize diligence. Similarly, since *SAT Score is* a parsimonious measure of cognitive ability, it operationalizes general intelligence. Fitting modern day West Pointers into the Prussian and German officer matrix predicts that West Pointers who have low *Military Development GPAs* and high *SAT Scores* would be the most likely selected for command positions. However, in fact, these are the opposite characteristics from what the U.S. Army is currently selecting as its battalion commanders (Table 5a), and, if the officer is among the most diligent of their peers (Best 3), then they are less likely they are to be promoted early.

So, Who Are the "Best & Brightest" West Pointers?

As stated earlier, each organization should specifically and deliberately define "best and brightest" to be the early human-capital and performance factors that are the strongest predictors of the performance outcomes that the organization most desires in the future. Regardless of what it is actually measuring, *Military Development GPA* was the factor most predictive of early promotion and command selection therefore it should be considered the strongest single factor indicating the U.S. Army's "best & brightest." Yet, it wasn't the only human capital factor predicting high-performance. *Academic GPA* and *SAT Score* could each be considered predictors. To achieve higher validity in its definition of its "best and brightest," if the U.S. Army used a bivariate approach to defining the "best and brightest," as having both a "best" component and a "brightest" component, it could uses lenses of *Military Development GPA* as a proxy for the "best," or conceptual element, and either *Academic GPA* or *SAT Score* as a proxy for the "brightest," or intellectual element.

Considering "best" and "brightest" as two separate categories, the individuals in this study can be divided up into four basic types. This was done by putting each cadet into the top fifty percent and

bottom fifty percent of their respective West Point class, according to these measures of "best" and a measure of "brightest," summarized in Table 13.

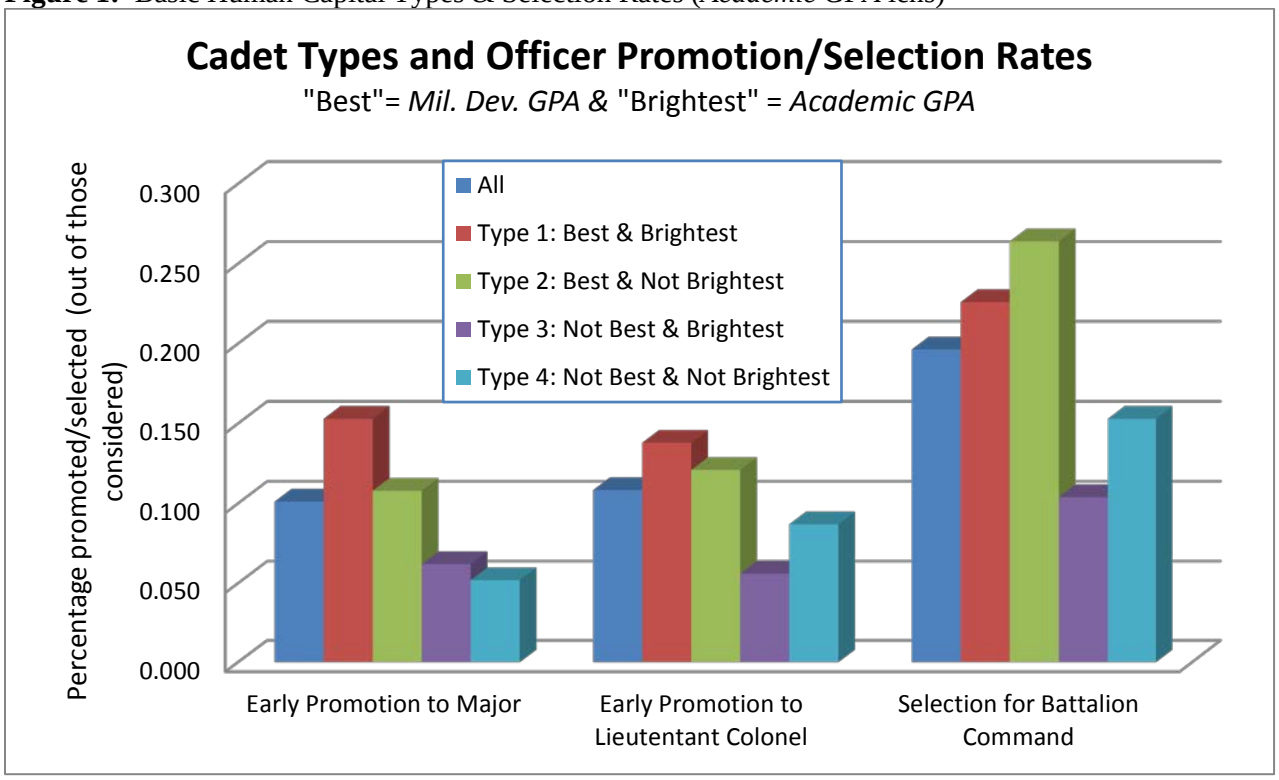
Table 11: Basic Cadet Talent Types [a]

	Bottom 50% of *SAT Score* or *Academic GPA* ("not brightest")	Top 50% of SAT Score or *Academic GPA* ("brightest")
Top 50% of *Military Dev. GPA* ("best")	*Type 2* *Best & Not Brightest*	*Type 1* *Best & Brightest*
Bottom 50% of *Military Dev. GPA* (not "best")	*Type 4* *Not Best & Not Brightest*	*Type 3* *Brightest & Not Best*

[a] Each cadet fell into one of the four types. Total percentages of cadets in each type are as follows: Type 1= 0.331; Type 2= 0.165, Type 3=0.166, & Type 4=0.333.

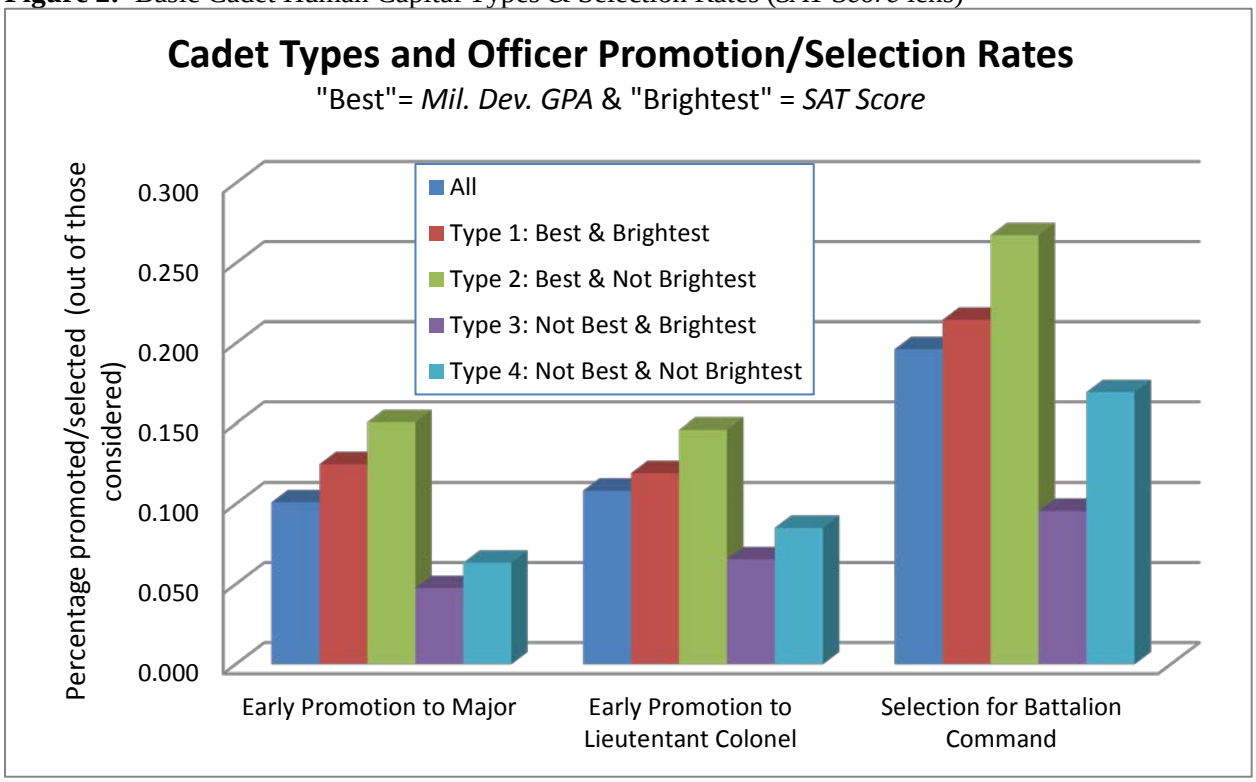
After defining the four types of cadets, I graphically demonstrate how each predicts early promotions and selection for battalion command, relative to each other. After the *Military Development GPA*, *Academic GPA* was the strongest predictor of being promoted early or selected of command. If we assume "brightest" mostly means academic ability over time (operationalized by *Academic GPA*), then the analysis in Figure 1 illustrates how cadet types predict performance. Of particular note is that Type 1 cadets are predicted to become the highest-performers in the first two selection events, and Type 3 cadets are predicted to be the lowest-performers in two of the three selection events.

Figure 1: Basic Human Capital Types & Selection Rates (*Academic GPA* lens)



But "brightest" may not be most accurately captured by *Academic GPA*, especially if "brightest" is referring to raw cognitive ability (i.e. Spearman's g), which is strongly correlated to *SAT Score.* Additionally, cognitive ability was shown to be the strongest overall predictor of job performance, especially in complex and leadership roles (Pearce, 2009). Accordingly, Figure 2 illustrates how cadet types predict performance with *SAT Score* as the "brightest" lens. Of particular note is that Type 2 West Pointers are predicted to become the highest performing officers, and Type 3 West Pointers are predicted to be the lowest performing, in all events.

Figure 2: Basic Cadet Human Capital Types & Selection Rates (*SAT Score* lens)



When comparing the two figures, it is notable that Type 1 West Pointers outperform Type 2s when using the *Academic GPA* lens, but Type 2s outperform Type 1s when using an *SAT Score* lens. A potential explanation would be that if the U.S. Army promotion system is measuring motivation, and the strength of motivation is a significant part (signal) within *Academic GPA*, it makes sense that high *Academic GPA* performers would have higher overall motivation (e.g. work ethic) than low *Academic GPA* performers This academic motivation is then correlated with a higher overall motivation, which leads to a higher performance across a multitude of tasks and a higher subsequent likelihood of early promotion.

These charts may indicate that "best" may be a requirement (perhaps a hygiene factor) for identifying high-potential West Pointers, but "brightest" is not. Additionally, the lowest performing West Pointers were the ones who were "bright," but not "best." Perhaps the Army penalizes officers who show intellectual promise without the conceptual/practical promise which is valued within the profession more

than they punish officers who are similarly unskilled practically, but do not appear as a threat intellectually. The discrepancy could also be additional evidence for the potential anti-intellectual bias in the U.S. Army, as discussed in detail earlier. Accordingly, these tables indicate the "best & not brightest" are more likely to be high-potentials than the "brightest & not best". Therefore, if the U.S. Army needs to make a decision about which types of mixed-human capital officers to invest in, the "best & not brightest" are more likely to be high-potentials worthy of investment.

Overall, these two graphical analyses indicate that Type 1s & 2s, as a group, uniformly outperform Type 3s & 4s, regardless of the specific lens used to operationalize of "brightest." Once again, this assumes the Army promotion system used during the period of this study is reliably selecting the officers that are most likely to lead to organizational success.

The Preparatory School's Mixed Effects

Another unanticipated potential performance predictor was the control variable *Prep School*. Table 5a shows that attending USMAPS is a negative predictor of *Early promotion to major* (β=0.59, $p \leq 0.01$), *Early promotion to lieutenant colonel* (β=0.61, $p \leq 0.10$), and *Selection for battalion command* (β=0.60, $p \leq 0.05$). Since an applicant to West Point usually has to be academically unqualified to be offered admission to USMAPS, at first glance, this effect could be caused by a lower cognitive ability or academic background, or due to systematic discrimination towards the underrepresented minorities and athletes that have been historically prevalent in USMAPS' student body. The regression controls for *Academic GPA, SAT Score*, being a *Recruited Athlete*, as well as various demographics. Therefore, the negative effect of the *Prep School* may be telling a story of organizational-identity bias.

Two possible explanations to the *Prep School's* officer performance penalty include *socialization* and *biases*. If the USMAPS program was not highly rigorous or exceptionally competitive during this time period (USMAPS Classes of 1987-1999, who joined the USMA Classes of 1992-2004), then it's possible that USMAPS cadet candidates were socialized to believe that average performance in elite organizations leads to great rewards (e.g. getting into West Point, as over 70 percent of the cadet

candidates do). If cadet candidates adopted this "average performance in an elite organization is actually great performance in a non-elite organization" perspective and it imprinted into their psyche, then they may have subconsciously lowered their self-expectations and performed lower as officers than many of their otherwise equal peers that were admitted directly into West Point.

The other possibility is that biases against USMAPS officers may come into play over a West Pointers' career. Attendance at USMAPS is not listed on the records that are reviewed when boards select early promotes and battalion commanders. However, fellow West Pointers, both peers and immediate superiors, may learn that a peer or subordinate officer attended USMAPS through normal social interaction over time. Since USMAPS consists mostly of initially academically unqualified West Point applicants, most of who became qualified during their time at USMAPS, it is possible that raters are holding this initial lower level of academic certification against USMAPS graduates, and subsequently giving them lower performance evaluations as Army officers.

Seminal Human Capital Theory (HCT) from economics proposes that, in addition to their intelligence, a worker's performance is driven by their cumulative education and experiences (Gary S. Becker, 1964). Moreover, Becker proposed that these educational and experiential contributions could be segmented into general human capital (GHC), which an employee can use in most any context, and firm specific human capital (SHC), which enables the employee to contribute only at a particular organization due to idiosyncrasies of process, procedure, or culture. Both organizations and employees can invest in education and training to increase their GHC or SHC, and both are incentivized to do so. Human Capital Theory has shown that individuals with higher education and tenure perform better than their colleagues who have less education and experience (Gary S. Becker, 1964).

West Point has invested approximately the same amount of education and training into each cadet, except for the cadets who have attended the United States Military Academy Preparatory School (USMAPS) the year prior to matriculating into West Point. Almost all USMAPS cadet candidates were judged by the USMA Admission Committee to very desirable candidates who were considered less academically qualified than applicants who were directly-admitted to West Point. Applicants offered

admission to USMAPS are often recruited athletes, under-represented minorities, and former enlisted soldiers. Since USMAPS cadets receive an additional year building academic and military human capital as compared to their peers, HCT may predict they would be more productive employees later. Therefore, selection factors that may have sent them to USMAPS in the first place, such as cognitive ability (Spearman's g or IQ, operationalized by *SAT Total*), motivation (through *Academic GPA* and *Military Development GPA*), demographics, and being a recruited athlete, are controlled for, HCT would likely predict increased performance, not decreased performance, making the negative predictions from attending the *Prep School* even more significant.

Superstars

This analysis showed that superstar performance as a cadet is a strong predictor that cadets will be high performers later in their careers, though there are different effects for superstardom among men and women. Superstar women were shown to have "glass ceilings" limiting how much they can benefit from their superstardom. As a token group in the Army (Kanter, 1977), female officers may still be dealing with systematic discrimination and may not yet be represented at levels high enough to force the Army organizations to treat them equitably.

Even though the results were not statistically significant, correlational evidence indicates minority West Pointers may experience different superstar and underperformer effects than Caucasians. Previous research has also shown that minority leaders are held to different standards than Caucasians leaders. Livingston & Pearce's (2009) research that bias against minority leaders who act assertively may be less prevalent in an objectively-based promotion system. This effect could be seen in minority West Pointers' transitions from cadet life to officership, because they must transition from a largely objective rating system (academic-objective, military/job-subjective, and physical-objective) into an almost completely subjective rating system (job-objective). Unfortunately, subjective-based rating systems are more likely to facilitate biases, including punishing African-American officers, for being assertive through their superstardom. Interestingly, if a minority cadet displayed the combination of *moderate* scholarship and

high cadet job evaluation performance, then they may stand to reap extra rewards as officers, though minority cadets who do well at both may be punished. The analysis in this study provides evidence for this possibility, as it showed that minorities who are top scholars and top leaders as cadets have less chance of early promotion (β=1.23) than minorities who are moderate scholars and top leaders (β=1.76), though not to a level of statistical significance. Could this illuminate a specific bias against high academic achievement in minorities?

Implications

How the Army defines its "best and brightest" West Pointers may predict how the Army allocates its limited personnel resources, such as unique developmental assignments, fellowships to attend elite civilian graduate schools, and specialized Army training. Defining the "best and brightest" is a strategic leader task that requires a rigorous, enterprise-specific analysis examining what early traits and performance histories predict the most valuable performance outcomes.

West Pointers' *Military Development GPAs, SAT Scores,* and *Academic GPAs* are all statistically significant predictors of officer future performance, yet this information is not available to West Point graduates' commanding officers, assignment officers, or officers conducting promotion boards. Including this information in development decisions would enable the Army to target officers least likely to be successful, in order to raise their performance, or conversely, target cadets who are most predicted to become the highest performers. This would ensure that the officers most likely to rise to executive leadership positions as senior Army officers are most prepared for their roles. This ability to accurately target cadets becomes increasingly important when we consider the Army is downsizing in terms of real-world operations, personnel, budget, and likely includes reducing the developmental opportunities for its employees (Haines, 2014). When resources become more limited, hard choices display the true values of the organization, and informed choices are usually wiser choices.

Looking forward, perhaps what the Army wants in its senior commanders is not in congruence from what its internal labor market has promoted. When the Army is picking its next battalion

commanders, it wants to choose officers with the capability for vision and complex strategy, but those people may have been already screened out of the system because they were not the best at solving repetitive low cognitive complexity tasks. Recent work has shown that leaders who survive numerous organizational promotion and training filters over time are likely to be dependable, but not great, when facing much more complex environments (Mukunda, 2012). Since battalion commanders are the first true executives in the U.S. Army and typically supervise organizations of over 500 people, they often have autonomy and are expected to perform tasks requiring high cognitive complexity. Battalion and higher commanders need to be able to think well, and without constraints, even though the promotion system that has filtered the candidates over time has shown a propensity to reward "best" and punish "brightest."

If the Army highly values cognitive ability in its senior leaders, then it could re-design its promotion system to capture junior officers' potential for senior leadership by including a measure of their cognitive ability. Though data operationalizing West Pointers' cognitive ability (*SAT Scores*) is readily available, the implementation of this consideration presents additional challenges. Historically, including measures of cognitive ability in selections has been shown to have been problematic from a legal perspective due to potential discrimination towards protected groups (Bobko et al., 1999; Pearce, 2009). A potential solution is to both include measures of cognitive ability as a factor for early promotions and command selections, while simultaneously establishing controls to ensure that under-represented populations are promoted and selected at the same rate as the candidates from majority groups.

It can certainly be argued that the U.S. Army's most senior uniformed leaders, its fourteen four-star generals, have now, and in the past, had Athenian officers amongst its ranks. Yet, if *SAT Score* accurately models the ability to be intellectual, then the West Pointers on the glide-path to becoming the U.S. Army's future four star generals (or "four stars" in the military vernacular) are bound to be lower than their average peers in this talent, when the tasks required at that level are at their highest cognitive complexity. Since four-stars generally choose the next group of four stars, if there is a bias, it will likely

be perpetuated through homophily. This phenomenon is not new, as Aristotle noted that people, "love those who are like themselves" (Aristotle, 1934) and Plato noted, "similarly begets friendship" (Plato, 1968). John Hillen, a military professionalism author, combat veteran, and former member of the bi-partisan U.S. Government National Security Study Group suggested that he believes that the Sparta-bias is winning in the U.S. Army (S. D. Naylor, 1997, p. 14) when he stated, "The four-stars get to choose the next crop of four-stars, so they perpetuate themselves as a group …".

If the competencies required to be an outstanding Army senior officer differ from those competencies required to be an outstanding junior officers, and the Army is choosing its HI-POs (early promotes and battalion commanders) based on their junior officer performance, then there is a strong likelihood that the talent pipeline of available officers for potential promotion to general officer rank is suboptimal. Therefore, the following policy recommendations are offered for consideration. These recommendations assume that cognitive ability is a critical factor in a senior officers' portfolio of talent, though certain not the only one.

Recommendation 1: This study provides evidence that the Army may have an intellectual-bias. Thus, it is recommended that senior leaders of the Army change the Army culture to put a premium on ideas and value professional debate. Senior Army officers could actively encourage and model intellectual engagement regardless of perspective, and frame public and private disagreements as normal and helpful. One potential way for leaders to do this is to tell their primary subordinates (for example, an Army division commander has several primary subordinates, including brigade commanders, a chief of staff, and a command sergeant major) that they have an obligation to periodically, but respectfully, disagree with their boss in public, while also having the responsibility to carry out the guidance with their best effort and enthusiasm when finalized (excepting cases where issues of illegality or immorality arise). Other ways to encourage intellectual engagement in the Army across rank structures is to enact subordinate input on all officers' unofficial and official evaluations (such as 360* evaluations, officer evaluation reports, etc.). Similarly, senior officers should host regular idea sessions to gain feedback on

everything from policy to quality of life, where they do more facilitating hearing other's ideas than speaking their own.[39]

Recommendation 2: In addition to changing the Army culture, the Secretary of the Army gives each promotion and selection board guidance on the criteria the board should use to make their recommended selections. Considering the Army's internal labor market, the Secretary could identify which senior leader traits should be sought out when considering promotions for junior and senior officers and direct the selection boards to use these as criteria. To specifically address cognitive ability, the Secretary of the Army could direct the selection boards to look for evidence of cognitive ability, such as advanced degrees, standardized test scores (which the Army has results for all West Pointers and many ROTC graduates), being distinguished graduates of academically-based military schools (such as the basic and career courses), and academic performance at commissioning sources.

Recommendation 3: To prevent homophily, the Secretary of the Army could appoint one or more senior civilians outside of the Department of the Army as voting members within each centralized selection board. This would help ensure that rank nor homophily has undue influence on the selection process.[40]

Recommendation 4: Set structural conditions that actively promote intellectualism as a valued trait in the Army. For example, encourage and expand high-potential career paths to include broadening assignments outside of the Army, such as with other government departments, other nations' militaries, and the corporate world (such as the current training with industry program). Additionally, vastly expand the opportunities for most officers to attend a top civilian graduate school program for masters' level education, preferably as individuals, and not as military cohorts (to ensure the officers are pushed outside of their intellectual and social comfort zones, where much growth occurs). Another way to emphasize ideas and thinking is to require every officer to write and submit at least one solo-authored professional

[39] These ideas are based on the embedding and reinforcing mechanisms in Edgar Schein's theory of leading cultural change. They are a leader's *attention, measurement, and control*, *deliberate role-modeling*, and *organizational design and structure* (Schein, 1990).
[40] These ideas are based on the embedding and reinforcing mechanisms in Edgar Schein's theory of leading cultural change. They are criteria for *recruitment, selection, promotion, retirement, and excommunication* (Schein, 1990).

article for potential publication while they are a student at each of the four primary military education courses (Basic Course, Advanced Course, Intermediate-Level-Education, and Senior Service College).

Limitations

This paper uses the results of three annually recurring officer evaluation boards as both its dependent variables and its measures of success, when it's possible that the Army officer promotion board process is imperfect. Therefore, if this research's goal is to identify what defines the "best" West Point officers, then the validity of the indicators found to positively or negatively predict success are limited to the validly and reliably of the Army promotion and command selection system and to whether they are actually selecting the Army's best officers. As with any process designed to fairly distribute limited resources based on performance, some West Pointers have their doubts about the validity of the Army promotion boards.

For example, a West Pointer from the Class of 2005 and his acquaintance posted this exchange on social media on March 18th, 2014 (USMA_Graduate_2005, 2014):

> *With the current downsizing of the U.S. Army, … I just read that the Army only picked up 65% of the [on-time] officers for promotion to major this year.*[41] *Yikes. Stuff continues to get real. Maybe our [officer] year group will be just super full of good majors...*

To which his acquaintance replied:

> *You will be a part of that super great better-than-sliced-bread group*

To which the member of the Class of 2005 responded:

> *Well, if I had great confidence in centralized selection boards, I'd feel comfortable that we'd truly pick the best. Unfortunately, I have a feeling there will be more than a few competent leaders who don't make the cut, and inept or weaker guys will continue to advance.*

Additionally, this paper only uses five years of West Point officer cohorts to measure the indicators of selection for battalion command, and only six years of West Point cohorts to measure the

[41] The average primary-zone promotion rate to major was 88.1% from 1996 to 2013 (Human_Resources_Command, 2014).

indicators for early promotion to lieutenant colonel, leaving the window open to discount the results as just applicable for those specific five to six years of the Army's history.

Another limitation involves the use of the *Military Development GPA* as a proxy for leadership. Even though the *Military Development GPA* is the strongest predictor of later officer success, this may simply be evidence that West Point and the Army consider the same behaviors to be important in cadets and Army officers. The evaluations of the periodic military development grades and cadet military courses may just be viewed as earlier versions of the same evaluation criteria that they will be assessed by after they get their commissions and serve at operational units. Another possible explanation of the *Military Development GPA's* consistently strong predictive power lies in the force-distributed nature of the ratings, which generally match the force-distributed nature of ratings typically received as officers. However, many cadets and former cadets are skeptics about the validity and reliability of the *Military Development GPA* and do not like the force-distributed rating system.[42] The following representative comments, taken from interviews conducted in 2013 illuminate their perspectives (Spain, 2013):

> *… from a cadet standpoint, the military grade thing seems really fishy to me, it is just really hard to quantify … it is really vague …*
>
> – West Point cadet senior

> *I thought [cadet military job grades] were really stupid. [Laughs] I thought it was kind of a self-fulfilling prophesy in a lot of cases, and that there were lot of people making assignments about (military development grades) that really knew nothing about leadership, or nothing about the Army … I really felt like I was being rated by a bunch of ignoramuses.*
>
> – former West Point cadet, now a field-grade officer

Indeed, even though a group of researchers who taught at West Point refer to military development grades as "leadership grades" (Milan et al., 2002, pp. A-1, ix, 3, 38), it is unclear whether or not *Military Development GPAs* are valid operationalizations of cadets' actual leadership abilities or performance. Since junior and senior-year cadet job positions (First Sergeant, Company Commander,

[42] Cadet Connor Love, USMA '14, surveyed his fellow cadets (N=132) for a class project in Spring of 2014 on their perspectives on the *Military Development GPA* assignment system (which is fundamentally the same *Military Development GPA* assignment system as during the period of this study). When asked is the "Military grading system fair?", 84.35% said no. When asked is the "Military grading system transparent?", 81.39% said no. When asked if the "Military grade predictive of performance as an officer?", 97.59% answered no. The other responses were all "yes" (Love, 2014).

Battalion Commander, etc.) are selected by the same Tactical Officers who assign much of the military development grades, it is no surprise that cadets' *Military Development GPAs* have been previously shown to be highly correlated with the seniority of their cadet job positions (Milan et al., 2002, p. 48). In other words, the cadets who do well at their jobs are the same ones who are put into high-level jobs, though the direction of this correlation is unclear. That is to say, do they receive good military development grades because they have more responsibility, or do they get put in positions of more responsibility because they showed promise in earlier positions?[43]

Another study by Bartone et al. (2009) indicated that the military development grades of cadets are measuring different things depending on the contexts. The study's authors posited that the eight academic semester military development grades measured leaders' performances "in managing schedules to meet pressing academic requirements while at the same time maintaining the basic military and physical skills." In contrast, they noted that the military development grades from the three summer training periods measured cadets' performances "in a series of challenging group tasks" (Bartone et al., 2009, p. 501). The study also found that cognitive ability and conscientiousness predict leader performance in only the academic context, extroversion predicted leader effectiveness in only the summer context, whereas hardiness and social judgment predicted leader performance in both (Bartone et al., 2009).

One could also argue that followership, defined as "the ability to effectively follow the directives and support the efforts of a leader to maximize a structured organization" (Bjugstad, Thach, Thompson, & Morris, 2006, p. 304), and/or individual performance are significant components of the *Military Development GPAs*. This study sheds no light on whether a periodic military development grade assigned by a cadet or a cadet tactical officer is actually grading a cadet's compliance with the expectations of the system on an individual (e.g. doing well in appearance, room cleanliness, *Academic GPA*, and *Physical GPA*), compliance with the expectation with regards to leadership responsibilities (e.g. spending time

[43] This could be tested if panel data were gathered that listed level of cadet positions held with corresponding military grade received during each of the 11 rating periods.

with your subordinates, your subordinates performing well), or measuring actual effectiveness in leadership per the U.S. Army's definition (i.e. "influencing people by providing purpose, direction and motivation while operating to accomplish the mission and improve the organization") (Army, 2012, p. iii). Certainly, followership is easier for a supervisor to observe and quantify than actual leadership as described in the definition above. As an illustration, the correlation between *Academic GPA* and *Military Development GPA* is ρ=0.42, and the correlation between *Physical GPA* and *Military Development GPA* is ρ=0.36, both of which are substantial. It is possible that raters of a cadet are using that cadet's objectively-based and easily observable academic and physical fitness performance levels to inform their opinions of the subjective military development grade. Therefore, *Military Development GPA* may be partially evaluating followership, especially in terms of individual performance. Indeed, a study showed that (Milan et al., 2002) the military development grades were more robust predictors of high individual performance than good leadership.[44]

Beyond the validity of the dependent and explanatory variables, design limitations potentially inhibit the findings. Specifically, having three conditional time periods of analysis (*Early promotion to major, Early promotion to Lieutenant Colonel,* and selection for *Battalion Command,* all conditioned in either being in the Army on Year 7 or Year 14) mean the results are not perfectly comparable with each other, because they are analyzing different starting populations. Even though there was not enough evidence to confirm selection bias, the populations being evaluated in this study are not only of different sizes, but they also have differing characteristics. Similarly, the idiosyncrasies of the various populations in this study should always be considered before applying the findings to other organizations. In general, the analysis of the *Early promotion to major* is likely more representative of the USMA population than the latter two samples, due to its starting period (Year 7) being much closer to the officers' USMA

[44] In a comprehensive study of the West Point Class of 1998, researchers found that military development grades factor-loaded onto an (individual) *Achievement* orientation with 0.543 and a *Good Leadership* orientation with a 0.127. *Good Leadership* was defined as "openness to new experiences, ideas, and perspectives. It included transformational leadership, contingent reward, and hardiness which loaded positively on the factor, and passive leadership, which loaded negatively." (Milan et al., 2002, p. 55).

graduation dates than the evaluation dates of *Early promotion to lieutenant colonel* and *Selection for battalion command* (Year 14).

Because this paper focuses on correlation (identifying "what" factors predict West Pointers retain, and not causation ("why" they retain), any of the explanations of "why" offered must be fully studied before any causal chains are established.

Since the data was generally in cross-section format, all models have not addressed the potential problem of personal-level heterogeneity influencing the results. If the data were panel in nature, we could account for this problem by using fixed effects. Due to the nature of the data we cannot account for this risk.

Finally, the two contexts of this study, being a cadet at West Point and an officer in the U.S. Army, are both highly structured military bureaucracies. The specificity and uniqueness of those cultures could possibly limit the external validity of the findings from being fully applicable to all other types of organizations.

Contributions

It is my primary hope that this paper contributes to the U.S. Army in understanding its current cadet and officer talent identification and management systems, and that West Point and the Army uses the results to reinforce areas of success and to improve any applicable personnel procedures and policies

In addition to being the first step in answering the Army's question of whether their best and brightest officers are retaining, this paper contributes in several significant ways to the performance literature across the social sciences. First, this paper's longitudinal scope of understanding what predicts job performance at the seven to nine and then the fourteen to seventeen year points in a professional's career is rare. Most other comparable studies use cross-sectional data that predicts current or much shorter term outcomes, such as next quarter, or next year. Most previous performance studies were considered long-range range if the papers analyzed performance up to five years out (Allison & Long, 1990; Groysberg, Lee, & Nanda, 2008).

In addition to being a longer range study than much of the existing literature, this study also looks at different points of a professional's career, where they are expected to lead and serve in different ways, and is a robust check of the predictive power of ability, traits, and experiences across various levels and types of responsibilities. Military officers, with their up-or-out promotion system and increasing levels of command authority and responsibility with each promotion, have vastly differing roles (transitioning from primarily small-unit leaders with the responsibility to execute high-structured tasks to being primarily responsible to provide the tone, vision and strategy for large organizations). Though the tasks of research-university scholars and hedge-fund analysts vary somewhat as they increase tenure and seniority in organizations, they vary much less over time than in a military officer's career. My analysis shows that some of the predictors of success remain stable over extended time and varying responsibilities, while others differ.

Secondly, this paper documents the simultaneous performance effects of an unusually large number of explanatory and control variables. This array of factors was shown to proxy human capital to predict the performance of people in the future. The large array of explanatory and control variables reduces the chances of endogeneity and gives the field a more robust look at each of the studied predictors of the performance of employees over time.

Third, this paper contributes a setting effect to the literature. The world is moving towards studying high-potentials, or stars, as they have been shown to be disproportionally influential on an organization's effectiveness (Groysberg, 2010). Perhaps this study offers externally valid ideas for predicting performance of HI-POs in other elite settings beyond the military, including public administration, business, and non-profit domains.

Fourth, this paper contributes to the race and gender literature by documenting the varying effects experienced later in their careers by employees with the same human capital and early levels of performance, when they have different races and genders.

Finally, this this paper makes an econometric contribution. By identifying appropriate instrumental variables and employing two-stage models to check for selection-bias's potential effects on

performance, this paper controls for alternative explanations and endogeneity issues, where most prior performance research assumes that those who choose to leave an organization voluntarily are a randomly selected group.

Future Research

This research could be expanded to study the complete officer sample from this time period, including the 70 percent who are commissioned through the Reserve Officer Training Corps (ROTC) and Officer Candidate School (OCS) programs. If the greater research question is "are the best and brightest junior officers getting out of the U.S. Army?" then the data from the other two major commissioning sources must also be examined.

Another predictor of officer performance that could be examined is second lieutenants' performances at their post-commissioning schools, the mandatory training all officers attend just before receiving an assignment to an operational unit. Each of these courses are approximately four to six months long, and most of them designate approximately the top 20 percent of each class as "honor graduates," which are awarded through complex algorithms of academic scores, physical fitness scores, and leadership scores. Therefore, just after commissioning and prior to being assigned to a traditional Army unit, each junior officer, regardless of where they were commissioned from, has the opportunity to distinguish themselves from their peers in a four month course. High performance at their basic courses may predict high performance as an officer.

One of the more significant findings in this first paper is the strong predictive power of the *Military Development GPA* on officer performance. Since 70 percent of this is from eleven separate job evaluations as a leader or a leader-in-training, researchers could study this process to unpack the question, "how do leaders grade other leaders?" Knowing the ability of the *Military Development GPA* to predict high-performing officers later in their careers, researchers could find out what processes and thoughts cadets and officers use when rating other cadets, including discovering which of these processes are formal, which ones are informal, and which are tacit. If the cadet rating system is trying to give cadets a

trial-run for the Army rating system, then the high predictive ability of the *Military Development GPA* may be a reflection of two similar rating systems that evaluate people who do not change much over time at different points at their careers, and achieve the same results.

Segmenting what is happening with the assignment of the *Military Development GPA's* job grades as a potential best practice to learn how to accurately assess leaders-in-training and leaders already in supervisory positions could be a substantial contribution to the leadership development and assessment literature. A follow-up project to this study is currently underway and titled *Leaders Grading Leaders*. This research's external validity to organizations beyond the military is somewhat dependent upon whether or not the Army officer promotion system is actually selecting the most effective leaders in the population, or if its system is simply selecting the best compliers. Current and past cadets who have experienced the forced-grading of the *Military Development GPA* aren't optimistic that the cadet rating system, and thus the similar Army rating system that is similar, is optimal. Representative comments follow (Spain, 2013).

> *But I think the Army promotion system is probably fundamentally flawed in the same ways that cadet leadership grades are.*
>
> – Current West Point cadet varsity athlete

> *From my math/statistical background, I would say we are measuring how good an officer is with the same criteria for how good a cadet is.*
>
> -- Former West Point cadet, Iraq veteran, and current field-grade officer

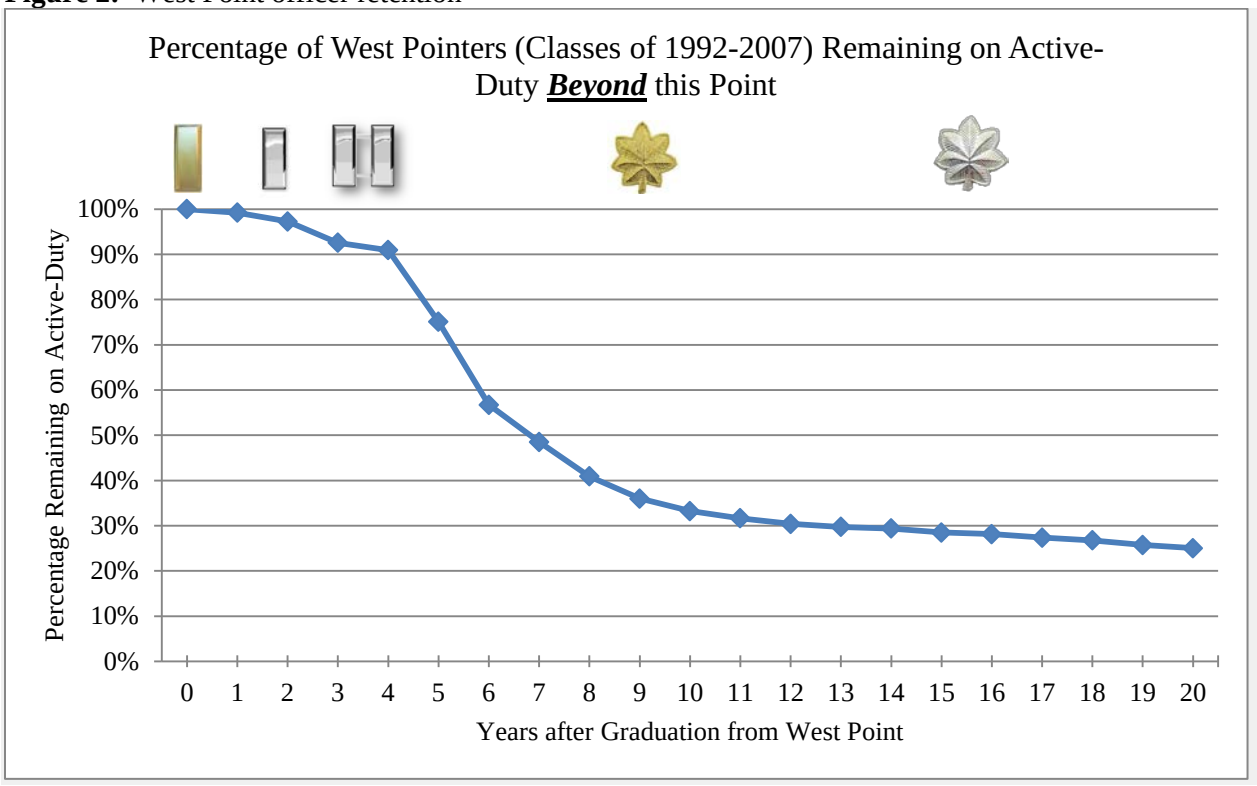
Perhaps most importantly, this research establishes several factors that predict future high performance as an Army officer. Enabled with these identifiers of what predicts the best officers, it is now possible to start the planned second phase of this research (turnover dynamics) and answer the broader question, *are the best and brightest West Point officers getting out of the U.S. Army*?

Appendix for Chapter 1: Robustness Checks (accounting for potential selection bias)

Even though this paper is specifically about what predicts performance, due to the nature of the Army officer promotion and retention systems, a thorough analysis of West Pointers' performance cannot completely decouple performance from retention. West Pointers' post-graduation active-duty service obligations (ADSO) last for five years after graduation, after which time they can generally resign honorably at any time (see Figure 2).[45] Since Army officers' first competitive promotions (early promotion to major) cannot possibly happen until at least seven years after commissioning, the challenge in analyzing "what" factors best predict officers' later success is the fact that West Pointers can honorably resign from the Army several years before their first consideration for early promotion. In other words, if Army officers resign at or near the end of their fifth year of officer service, they were not on active-duty long enough to have been identified as one of the Army's best officers, even though they might have actually been among the Army's best officers. Therefore, it is possible that selection bias may be influencing the results of the analyses of Hypotheses 1 through 6.

[45] ROTC scholarship officers have ADSOs of four years. ROTC non-scholarship officers and OCS officers have ADSOs of three years.

Figure 2: West Point officer retention [46, 47, 48]



These potential selection bias issues are also at play at the two later promotion/selection boards. Indeed, just over 30 percent of West Pointers are still in the Army when it is time for the early promotion to lieutenant colonel selection board (14-16 years after graduation) and battalion command selection boards (14-17 years after graduation). The risk is that the officers who choose to separate are, on average, different in a statistically meaningful way than the officers who remained in the Army and were considered at the subsequent selection boards. In other words, were the officers who were selected for

[46] Though Figure 2 appears, at first glance, to show that a large number of West Pointers separate from the Army during their fourth year of service, this is actually not the case. Most of those officers that appear in the chart to separate during their fourth year are actually separating exactly at the end of their fifth year of service. The data are yearly figures, indicating if an officer is still in the Army a day *past* that point. Therefore, the officers that set the date of their official resignation from the Army at the earliest possible point under (normal conditions), which is the end of five years of service, will show up in the data as no longer being in the Army five years beyond graduation.

[47] The military rank insignias along top of the graph are the ranks that West Pointers (and all active-duty officers) typically achieve at that approximate time of in their careers, should they remain on active-duty. The ranks, from left to right, are Second Lieutenant, First Lieutenant, Captain, Major, and Lieutenant Colonel. Note that the graphics represent the average time that an officers is actually promoted to that rank, but the early promotion boards for major and lieutenant colonel happen approximately two years prior to the average point of the actual promotions.

[48] The military rank insignias along top of the graph are the ranks that West Pointers (and most active-duty officers) typically achieve at that approximate time of in their careers, should they remain on active-duty. The ranks, from left to right, are Second Lieutenant, First Lieutenant, Captain, Major, and Lieutenant Colonel.

early promotion and battalion command the best officers out of all of their West Point classmates, or were they just the best officers who *chose to remain* in the Army up to those points?

This need to account for self-selection has been shown by many prior studies (E.J. Castilla, 2008; Emilio J Castilla, 2011; Groysberg et al., 2008; Nakosteen & Zimmer, 1980; Robinson & Tomes, 1982). To address it, I conducted a two-stage regression analysis to take into account a junior officer's self-selection of staying or resigning, permitting an accurate estimate of who would have been promoted *had everyone stayed in*, versus just checking who was promoted of those who remained. To evaluate the possibility of selection bias, a Heckman-Probit two-stage regression model was applied to test if the two populations for each of the three dependent variables could be considered the same, or if they were predicted to be different, which would cast doubt on the validity of the earlier findings. A Heckman-Probit model designed to check for selection bias requires an instrumental variable, which must satisfy two conditions to be valid. The first condition, known as the "first-stage," is that the instrumental variable should influence the dependent variable of the first-stage equation (remaining in the Army at least until just prior to the promotion board in question). The second condition, known as the "exclusion restriction," is that the instrumental variable should not affect the dependent variable being checked, in this case a West Pointer's selection for early promotion or battalion command.

A group of exogenous variables for our population that satisfies both of these requirements are the *Home region* dummies, the six areas of the country a cadet considered to be their home at time of matriculation, including the West, Midwest, Northeast, Southeast, Southwest, and outside the continental United States (OCONUS). To be a valid first-stage requirement, the home region dummies should be likely to influence an officer's turnover decision, which is whether or not they choose to stay in the Army beyond their active-duty service obligation. I find this to be the case due to two related phenomena. The first is that cadets' *Home regions* may influence the likelihood that their original decision to attend West Point could be interpreted as decisions to leave their families' nests for careers in the military, which I will call the *proximity to family*. The second is that cadets' *Home regions* may facilitate differing levels of information and access to post-military job opportunities, which I will call *economic opportunities.*

First, in examining the *proximity to family*, consider a high school senior applying to colleges. High-school students from the Northeast, including New York, Pennsylvania, and New Jersey, Delaware, the District of Columbia, Maryland, and New England are almost all within a six hour drive to West Point, and most much closer. This geographical proximately could influence a high-school student, and family members who are influential in the college selection process, to push for attendance at West Point, since it would be close to family and enable the familial support possible at that relatively minimal distance. It would also allow the family members to participate in their child's college experience by allowing frequent visits.. This value of proximity to family may predict a young person's desire to remain closer to their original family, resulting in a corresponding lower level of commitment to want to stay in a military lifestyle, which typically results in officers being stationed throughout their military careers in locations far away from their original families.

In addition to influencing West Pointers' turnover through *proximity to family*, military officers' *Home region* likely influence West Point officer turnover decisions through knowledge of and access to the region's vast *economic opportunities*. Consider former cadets from the Northeast. Their likelihood of personal and family-networked knowledge of the region's vast high-paying economic opportunities and high concentration of many of the nation's top graduated schools, make officers from the Northeast more likely to have lower barriers to their exiting the service, thus influencing their retention decisions.

Table 14: Summary statistics and correlations for dependent variables and *Home region* dummies

	Obs	Mean	Std. Dev.	Min	Max	Early promotion to MAJ	Early promotion to LTC	Selection for Battalion command
Early promotion to MAJ	5,584	0.10	0.30	0	1			
Early promotion to LTC	1,614	0.11	0.31	0	1	0.32*		
Battalion Command	1,594	0.20	0.40	0	1	0.32*	0.39*	
West	12,056	0.15	0.36	0	1	-0.01	-0.03	0.00
Midwest	12,056	0.21	0.41	0	1	0.00	0.01	0.01
Northeast	12,056	0.27	0.44	0	1	0.00	-0.01	-0.04
Southeast	12,056	0.21	0.40	0	1	0.01	0.01	0.04
Southwest	12,056	0.12	0.33	0	1	0.00	0.02	-0.02
Outside Continental US	12,056	0.04	0.19	0	1	-0.03	0.00	0.03

*$p \leq 0.05$ (correlation is significant at the 5% level)

In addition to influencing former cadets' officer turnover decisions, to be a valid instrument, *Home region* should not influence cadets' performance as an Army officer, following the required "exclusion restriction." After reviewing the correlation matrix of *Home region* and the dependent variables, as well as considering numerous potential pathways that a *Home region* may possibly influence or predict correspondingly different levels of an officer's performance, none has shown any realistic applicability. This satisfies the second requirement of being a valid instrumental variable.

To test the models for selection bias, once again performance regression models were applied, with the following exceptions. First, I used a probit instead of a logistic (logit odds ratio) model.[49] Secondly, the regression equation was set up in two stages with *Home regions* as the instrumental variables. The first-stage equation looked at officers who were still in the Army after seven years in service, which shows if they decided to stay in the Army long enough to be considered for each of the three dependent variables. The second-stage equation assumed there was selection bias and took this into account when predicting officer performance, enabling a more conservative estimate of officer performance modeling. The only differences from the Heckman probit's first-stage equations and the second-stage equations are the dependent variables (retention and performance, respectively), and the instrumental variables *Home region* dummies that are added to the first stage.

The first dependent variable to check for possible selection bias was *Early promotion to major*. The first-stage applied the following probit model specification:

Probit (likelihood of a West Pointer remaining in the Army beyond six years after graduation) = $\alpha + (\beta_1$ *x SAT Score)* $+ (\beta_2$ *x Academic GPA)* $+ (\beta_3$ *x Military Development GPA)* $+ (\beta_4$ *x Physical GPA)* $+ (\beta_5$ *x Prep School dummy)* $+ (\beta_6$ *x Recruited Athlete dummy)* $+ (\beta_7$ *x Female dummy)* $+ (\beta_8$ *x African American dummy)* $+ (\beta_9$ *x Hispanic American dummy)* $+ (\beta_{10}$ *x Asian American dummy)* $+ (\beta_{11}$ *x Native American dummy)* $+ (\beta_{12}$ *x Other Minority dummy)* $+(\beta_{13} \ldots \beta_{29}$ *x Military Branch dummies)* $+ (\beta_{30} \ldots B_{42}$ *x Year Group dummies)* $+ (\beta_{42} \ldots \beta_{48}$ *x Home region dummies)* $+ \varepsilon$.

[49] STATA 13.1 is configured to conduct the Heckman model with probit, not logit.

The second-stage applied the following probit model specification:

Probit (likelihood of early promotion to major) $= \alpha + (\beta_1$ *x SAT Score)* $+ (\beta_2$ *x Academic GPA)* $+ (\beta_3$ *x Military Development GPA)* $+ (\beta_4$ *x Physical GPA)* $+ (\beta_5$ *x Prep School dummy)* $+ (\beta_6$ *x Recruited Athlete dummy)* $+ (\beta_7$ *x Female dummy)* $+ (\beta_8$ *x African American dummy)* $+ (\beta_9$ *x Hispanic American dummy)* $+ (\beta_{10}$ *x Asian American dummy)* $+ (\beta_{11}$ *x Native American dummy)* $+ (\beta_{12}$ *x Other Minority dummy)* $+ (\beta_{13} \ldots B_{29}$ *x Military Branch dummies)* $+ (\beta_{30} \ldots B_{42}$ *x Year Group dummies)* $+ \varepsilon$.

The first and second-stage models for *Early promotion to lieutenant colonel* and *Selection for battalion command* were identical to the above, except for the dependent variables in each stage. Running the Heckman Probit (STATA v.12 command = *heckprob*) gave the following results:

Table 15: Heckman Probit predicting promotion events and controlling for turnover

	Early Promote to Major			Early Promote to Lieutenant Colonel			Selection for Battalion Command		
		Heckman Probit			Heckman Probit			Heckman Probit	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Probit version of original equation (4a, 4)	2nd Stage (w/selection adjustments)	1st Stage	Probit version of original equation (4b, 4)	2nd Stage (w/selection adjustments)	1st Stage	Probit version of original equation (4c, 4)	2nd Stage (w/selection adjustments)	1st Stage
	Early Promote to MAJ	Early Promote to MAJ (without *Home region* dummies)	Still in Army after 7 years?	Early Promote to LTC	Early Promote to LTC (without *Home region* dummies)	Still in Army after 14 years?	Select for Battalion Command	Select for Bn Cmd (without *Home region* dummies)	Still in Army after 14 years?
Female	0.04	0.05	-0.04	0.20	0.19	0.01	-0.08	-0.08	0.03
	(0.09)	(0.09)	(0.04)	(0.18)	(0.18)	(0.07)	(0.17)	(0.16)	(0.07)
Afri-Amer.	-0.15	-0.16	0.21***	0.15	0.06	0.28***	-0.06	-0.14	0.29***
	(0.12)	(0.16)	(0.05)	(0.18)	(0.29)	(0.08)	(0.18)	(0.24)	(0.09)
Hisp-Amer.	-0.11	-0.09	-0.07	0.05	0.04	0.04	-0.04	-0.05	0.01
	(0.14)	(0.15)	(0.07)	(0.23)	(0.22)	(0.10)	(0.24)	(0.22)	(0.11)
Asian-Am.	0.11	0.09	0.12**	-0.56**	-0.53*	0.04	-0.04	-0.05	0.04
	(0.11)	(0.12)	(0.06)	(0.27)	(0.30)	(0.08)	(0.22)	(0.20)	(0.09)
Nati-Amer.	-0.25	-0.62	0.16		-4.84***	0.35	-0.41	-0.54	0.38
	(0.33)	(0.40)	(0.15)		(1.31)	(0.23)	(0.48)	(0.47)	(0.24)
Other-Min	0.12	0.11	0.04	1.29	1.43*	-0.52		-5.59**	-0.53
	(0.23)	(0.23)	(0.13)	(0.82)	(0.78)	(0.44)		(2.39)	(0.44)
Recruited Ath.	0.15**	0.17	-0.24***	0.34***	0.39***	-0.25***	0.19	0.23	-0.27***
	(0.07)	(0.13)	(0.03)	(0.13)	(0.13)	(0.05)	(0.13)	(0.17)	(0.06)
Phys. GPA	0.23***	0.23***	-0.03	0.42***	0.41***	-0.05	0.28**	0.29**	-0.08
	(0.07)	(0.07)	(0.04)	(0.13)	(0.15)	(0.05)	(0.11)	(0.11)	(0.05)
Prep-School	-0.28***	-0.27***	0.05	-0.24*	-0.29**	0.19***	-0.35***	-0.38***	0.20***
	(0.08)	(0.08)	(0.04)	(0.13)	(0.14)	(0.05)	(0.12)	(0.12)	(0.06)
Midwest [a]	-0.03		-0.00	0.12		-0.05	0.02		-0.08
	(0.08)		(0.04)	(0.16)		(0.07)	(0.14)		(0.07)
Northeast	0.03		-0.09**	0.10		0.03	-0.12		0.01
	(0.08)		(0.04)	(0.15)		(0.06)	(0.14)		(0.07)
Southeast	0.07		0.05	0.18		0.05	0.16		0.05
	(0.08)		(0.04)	(0.16)		(0.07)	(0.14)		(0.08)
Southwest	0.05		0.03	0.24		0.07	0.03		0.04
	(0.09)		(0.05)	(0.17)		(0.08)	(0.16)		(0.08)
Outside Continental US	-0.21		-0.24***	0.09		-0.35***	-0.00		-0.35***
	(0.18)		(0.07)	(0.24)		(0.10)	(0.21)		(0.10)
Mil. Dev. GPA	1.04***	1.00***	0.39***	0.75***	0.55	0.43***	0.83***	0.61	0.42***
	(0.09)	(0.28)	(0.05)	(0.16)	(0.52)	(0.07)	(0.16)	(0.51)	(0.07)
Acad. GPA	0.23***	0.23**	-0.18***	-0.02	-0.01	0.01	-0.25*	-0.20	-0.04
	(0.07)	(0.10)	(0.04)	(0.14)	(0.14)	(0.06)	(0.13)	(0.15)	(0.07)
SAT Score	-0.17***	-0.16***	0.04***	-0.07	-0.08	0.02	-0.16***	-0.17***	0.01
	(0.03)	(0.03)	(0.01)	(0.05)	(0.05)	(0.02)	(0.05)	(0.06)	(0.02)
N (# obs)	5,547	11,975		1,589	5,613		1,316	4,721	
pseudo R^2	0.120			0.091			0.169		
rho (ρ)		- 0.14			-0.45			-0.47	
p-value		0.86			0.65			0.63	
Instr.'s F-stat [b]		30.10***			25.03***			21.90***	
Constant	-4.30***	-4.04***	-1.32***	-4.23***	-2.70	-2.12***	-1.04	0.15	-1.79***
	(0.45)	(1.56)	(0.23)	(0.82)	(3.30)	(0.35)	(0.79)	(2.09)	(0.38)

* significant at p≤0.10, **p≤0.01, and ***p≤0.001

Table 15 (continued): Heckman Probit predicting promotion events and controlling for turnover

[a] *Home region* dummies were used as instrumental variables for the two-stage regression. They were included in comparison equations 1, 4, & 7, and in second-stage equations 3, 6, & 9. They were omitted intentionally on first-stage equations 2, 5, & 6. - The region *West* is the instruments' reference category.

[b] Each of the three model's instrumental variables, the six geographical regions, were tested by a χ^2 test with five degrees of freedom, which, in large sample sizes such as these, approximates the F-Statistic. Each group's F-statistic was >10, giving evidence for their validity as instruments

-The Heckman Model will not work with Logit on STATA 13.1, therefore I chose to do a parallel test using probit.

-The β-values are probit coefficients, which are based around 0.0. A number below zero is negatively predictive, and a number above zero is positively predictive.

-Robust standard errors are listed below each β value in (parentheses).

-Graduation year and Army Branches (functions) were control variables but were not presented in the models for brevity's sake.

-Deployments were not used in the Heckman probit because they would cause all officers who left the Army prior to the date of the deployment variable to be dropped from the regressions.

-The reference category for female dummy is male.

-A person is Caucasian if all of their ethnicity dummies are = 0.

-The smaller sample sizes of models 1, 4, and 7 are intentional. Equations 1, 4, and 7 are all controlled on West Pointers retaining in the Army until the point of that respective promotion/selection board, to ensure the regression results include those who were actually considered for promotion/selection. Likewise, the first and second stage equations were intestinally not controlled for surviving long enough to experience that promotion/selection event intentionally, as that would not allow accurate testing of selection bias.

-Deployment years were intentionally omitted from the selection bias analysis, as it is panel data that changes over time, and would necessarily limit the observations of the analysis by anchoring them to an arbitrary point in time.

Assuming instrumental variables, *Home region dummies*, meet the previously explained conditions the results of the original regressions (models 1, 4, & 7 of Table 8) and Heckman Probit second stage regressions (models 2, 5, & 8 of Table 8) may be examined for evidence for selection bias, or lack thereof. First, I examine the results of the *Early promotion to major* selection-bias analysis (models 1-3 if Table 8). The first step is to examine the probability that the Wald test of independent equations has a correlation (ρ) value equal to zero. In other words, , I am checking to see if the error terms of the first-stage (turnover, model 3) and the second-stage (promotion, model 2) are independent of each other (correlation = 0), or if they are dependent of each other (correlation ≠ 0), the latter of which would indicate selection bias. The null hypothesis for this test is that the error terms of the two equations are independent of each other (correlation =0). To reject the null, p-value should be less than 0.05 (for a 95 percent confidence internal) or 0.10 (for a 90 percent confidence interval).

The analysis did not provide evidence to definitively claim there is selection bias in the early promotion to major analysis. Indeed, the rho (ρ) value = -0.14, but the p-value = 0.86. In other words, if this data is re-sampled many times and there truly wasn't selection bias, there is an 86 percent chance any random sample of this data will have a rho value at least as large as -0.14. Also, comparing the β-

coefficients from the probit version of the original equation (model 1) with the 2nd stage equation (model 2) across the four primary explanatory variables (*SAT Score*, *Academic GPA*, *Military Development GPA, and Prep School*), the β-coefficients are all identical in direction and very similar in magnitude and significance. Therefore, the original analysis (logit: Table 4a, model 6; probit: Table 8, model 1) holds.

Rejecting the null hypothesis does not mean that selection bias in the *Early Promotion to Major* analysis is absent; it could exist, albeit weakly, yet still be present enough to affect the results. The negative correlation ($\rho = -0.14$) indicates that, if the selection bias does exist, that the more likely an officer is to stay in the Army up to the point they are considered for early promotion to major, the less likely they are to be promoted. To account for this possibility, I could use the second stage equation's (Table 8, model 2) β-coefficients as my final performance predictors instead of the probit version of Equation 1's (Table 8, model 1) β-coefficients, since model 2 is a more conservative estimate that takes into account the possibility of selection bias. Regardless, even using model 2 of Table 8 in order to be more conservative, its predictions are almost identical to that of the original equation (model 1 of Table 8).

Similarly, there is not enough evidence to positively claim there is selection bias in the *Early promotion to lieutenant colonel* analysis. Checking for selection bias, the two-stage regression gives a rho (ρ) value = -0.45 and the p-value = 0.65, showing that, if re-sampled randomly and there truly was no selection bias, there is at least a 65 percent chance the randomly selected would have a correlation at least as high as -0.45. Also, comparing the β-coefficients from the probit version of the original equation (Table 8, model 4) with the 2nd stage equation (Table 8, model 5) across the four primary explanatory variables (*SAT Score, Academic GPA, & Military Development GPA, and Prep School*), the β-coefficients are all identical in direction and very similar in magnitude and significance. Therefore, the original analysis holds statistically (logit: Table 4b, model 6; probit: Table 8, model 4).

Yet, similar to the previous analysis, failing to reject the null hypothesis does not mean selection bias does not exist. Though there is even less of chance of selection bias in this analysis ($p \leq 0.91$) versus the analysis of the promotion to major ($p \leq 0.16$), the possibility still exits. The negative correlation ($\rho =$ -

0.45) indicates that, if selection bias does exist, that the more likely an officer is to stay in the Army up to the point they are considered for early promotion to lieutenant colonel, the less likely they are to be promoted. To account for this possibility, I could use the second stage equation's (Table 8, model 5) β-coefficients for our final performance predictions instead of model 4, as model 5 takes into account possible selection bias. Nonetheless, even using model 5 in order to be more conservative, its predictions are almost identical to that of the original equation (Table 8, model 4).

Finally, there is not enough evidence to definitively claim there is selection bias in the S*election for battalion command* analysis. Checking for selection bias, the two stage regression gives a rho (ρ) value = -0.47 ($p \leq 0.63$), showing that, if the data were re-sampled randomly and there truly was no selection bias, there is a 63 percent chance the data selected will have a correlation at least as high as -0.47. Also, comparing the β-coefficients from the probit version of the original equation (model 7of Table 8) with the 2nd stage equation (model 8) across the four primary explanatory variables (*SAT Score, Academic GPA, Military Development GPA, and Prep School*), the β-coefficients are all identical in direction and almost identical in magnitude and significance. Therefore, I do not have enough evidence to claim definitively that selection bias is affecting the results, and the original analysis holds statistically (logit: Table 4c, model 6; probit: Table 8, model 7).

Similarly to the preceding early promotion to major and early promotion to lieutenant colonel analyses, failing to reject the null does not necessarily mean the possibility of selection bias does not exist. Since there is still a chance of selection bias in this analysis, and selection bias could be affecting the results. The negative correlation ($\rho = -0.47$) indicates that, if the selection bias does exist, the more likely an officer is to stay in the Army up to the point they are considered for selection for battalion command, the less likely they are to be promoted. To account for this possibility, I could use the second stage equation's (model 8) β-coefficients for our final performance predictions, as they take into account possible selection bias. Therefore, I use the second stage equation's (model 8 of Table 8) β-coefficients for performance predictions instead of model 7 of Table 8, as model 8 if Table 8 takes into account

possible selection bias. Even if I did decide to use model 8 of Table 8 in order to be more conservative, its predictions are almost identical to the predictions of model 7 of Table 8, the original equation.

In sum, after testing for selection bias by controlling for turnover, I cannot definitively claim selection bias exists in any of the analyses of the three original dependent variables, and the original models (model 1, 4, & 7 of Table 8 and their corresponding logit counterparts in Table 5a) stand.

Chapter 2

Are the "Best & Brightest" West Point Officers Leaving of the US Army?

Part 2 of 2: Turnover Dynamics of High Potentials

Chapter Abstract

This paper is the second of a series examining whether the "best and brightest" West Point officers are resigning from the U.S. Army at a rate higher than their average-performing peers. Using archival data from sixteen West Point graduate cohorts from 1992 to 2007 (N=14,740), results show that the cadet *Military Development GPA*, primarily the cumulative score of four years of subjective cadet job evaluations, and the strongest predictor of later becoming high-performing officer, negatively predicts turnover at the initial and mid-career turnover opportunities. Similarly, cognitive ability (measured by *SAT Score*) negatively predicts turnover at the initial voluntary turnover opportunity, though *Academic GPA* predicts turnover at the same. The analysis also demonstrates that female and ethnic minority West Pointers experience different turnover dynamics than male and Caucasian West Pointers, respectively. The results explore the concept of *functional human capital*, and provide some evidence that it may predict turnover. To ensure the robustness of the various analyses, I explore alternative explanations for turnover, including deployment time, serving under force-distributed performance rating systems, family demographics, and macro-economic conditions. Finally, I directly addresses whether the "best and brightest" West Pointers are leaving the U.S. Army, and then discuss the findings, implications, limitations, contributions, and areas of further research.

Introduction

The first paper in this series, *Are the Best and Brightest West Point Officers Getting Out of the U.S. Army, Part 1 of 2: What Predicts the Best?* (Spain, pending), was fundamentally about performance, answering "what" human capital and cadet performance factors predict West Pointers' performance as Army officers. The previous paper found strong evidence that cadets' *Military Development GPAs*

(military talent) strongly predict their subsequent Army officer performance across three different early promotion or command selection events. Additionally, the research showed that cadets' *Academic GPAs* are moderately positive predictors of future performance, while cognitive abilities (operationalized through *SAT Score*) are negative predictors for becoming high-performing officers.

This paper is fundamentally about turnover, referred to as "retention" in the military context, meaning their goal is actually to prevent turnover. This paper seeks to answer "what" factors predict West Pointers' retention as Army officers, and illuminate implications of the same for both the U.S. Army and non-military organizations. To do so, I use cadet factors that Paper 1 found to predict officer high performance to the retention history of the West Point Classes of 1992-2007 in order to detail the retention dynamics for organizations' "best and brightest" employees. Though this paper will occasionally discuss possible reasons "why" the different factors predict various retention outcomes, those discussions will be exploratory in nature and subject to future study.

Most organizations are involved in acute competitions for the best personnel. Indeed, the nexus of two decades of high overall economic growth, increased demand for high-skill workers, rising career portability, and the knowledge-based economy has created a "war for talent" (Chetkovich, 2002). Understanding how to attract, develop, and retain the "best and brightest" becomes even more significant when considering this war for talent is actually for strategic (sustainable) competitive advantage (Chambers et al., 1998; Tulgan, 2001).

The public sector may face especially tough challenges in its desire to attract and retain talent. Much of this stems from increasing overall dissatisfaction with government and a decreasing appetite for government careers among educated, talented young Americans (Chetkovich, 2002; G.A.O., 1994). This trend may only be worsening, as evidenced by the top U.S. public policy schools placing fewer and fewer proportions of their graduates into government service (Chetkovich, 2002).

The combination of an overall war for talent and a potential distaste for government service may forecast negative turnover dynamics for the junior leaders of the U.S. Military, especially when considering the U.S. Army operates in a restricted internal labor market. Internal labor markets are

characterized by limited points of entry (Doeringer & Piore, 1971), which limits the candidates for senior roles to only employees who originally matriculated at the single intake point, and who remained in the organization long enough to be considered for a senior role. In other words, the Army can only be led by those officers it retains for over twenty years. Since almost all Army officer turnover is voluntary, the Army can only be led by those officers who decide to remain as officers on active-duty.

Similar to most competitive organizations, if a disproportionately higher number of the Army's "best and brightest" junior officers are resigning, relative to their average performing peers, the U.S. Army's current and future performance is potentially disadvantaged. Conversely, if a disproportionally higher number of the Army's "best and brightest" junior officers are retained, the Army's current and future performance is likely advantaged. Since Army general officers are often the U.S.'s senior military commanders during times of peace-keeping, deterrence, disaster-relief, and armed conflict, ensuring the Army retains its best officers is of strategic national importance

Recently, scholars and media have publically claimed that the "best and brightest" Army officers are leaving the military (i.e. "getting out") at their first opportunity, which is typically the conclusion of their 4th of 5th year of active-duty service. Indeed, a 2011 master's degree thesis at Harvard's Kennedy School proposed that a vast majority of junior officers believe the best officers they knew were getting out (Falk & Rogers, 2011). Similarly, a 2011 Atlantic magazine article titled *Why Our Best Officers Are Leaving* (T. Kane) and its follow-on book *Bleeding Talent* (Tim Kane, 2012) generated great discussion in national security circles by concluding that over 93 percent of West Point officers believed that at least one-half of the best officers they knew decided to leave the military instead of staying until retirement age (typically 20 years).[50]

The debate has developed credible advocates in both camps, as two U.S. Army general officers recently engaged in a public debate on this topic. Lieutenant General (retired) David Barno[51] argued

[50] The Atlantic article did not specifically define what constituted the "best" or the "brightest," nor was it intended to be a scholarly or rigorously analytic work. Additionally, the study's sample size (N=248) and survey response rate (4 percent) were low, potentially rendering the findings less certain.
[51] Barno is a 1976 West Point graduate who deployed in combat to Grenada, Panama, and Afghanistan.

using anecdotal data that the “best” were leaving (Barno, 2013). Lieutenant General Ben Hodges[52] countered and argued that the best were staying, also using anecdotal data (Hodges, 2013). The Army loses several thousand officers to voluntarily resignations and retirements every year, but whether they are the "best and brightest," or not, has yet to be conclusively settled.

In 2012, the U.S. Army’s Deputy Chief of Staff for Personnel and Director of Human Resources remarked that,"[The Army is] in competition for talent, we bring in a lot of great talent, but how do we retain it?" and asked the author to study this puzzle (Bostick). The Army knows how many officers are getting out and who these officers are. Since almost all officer losses are voluntary, the following questions emerge: *1) Can the U.S. Army predict which of its new lieutenants are most likely to become their highest-performing officers in the future (which of its lieutenants are its "best and brightest")?* 2) *If so, are the Army's "best and brightest" junior officers choosing to stay in or leave the Army? 3) How should the answers to questions one and two inform the U.S. Army's personnel and command policies going forward?* Simply put, who are the Army's "best and brightest" junior officers, are they choosing to get out of the Army, and, if so, what should the Army do about it?

This project focuses solely on West Point graduates. Even though West Pointers only make up one quarter of all Army officers, they typically hold a disproportionately high percentage of senior leader (general officer) positions. For example, as of October, 2013, twelve of fourteen Army four-star generals were West Pointers (US_Army_GOMO, 2014). Even when considering that West Pointers receive more pre-commissioning training than ROTC and OCS (J. T. Reed, 2013), the percentage of West Pointers rising to the most senior positions in the Department of Defense is notable.

However, a West Pointer also costs the American taxpayer much more to produce. A 1990 Congressional Budget Office report estimated a West Point graduate’s educational costs were $229,000, as compared to $55,000 for an ROTC product, and $15,000 for an Officer Candidate School graduate (in 1989 dollars) (CBO, 1990). Assuming these costs have risen proportionally to standard rates of inflation, which was a 88.6 percent cumulative inflation from 1989-2013 (CMG, 2013), and assuming a relatively

[52] Hodges is a 1980 West Point graduate who deployed in combat to in Iraq and Afghanistan.

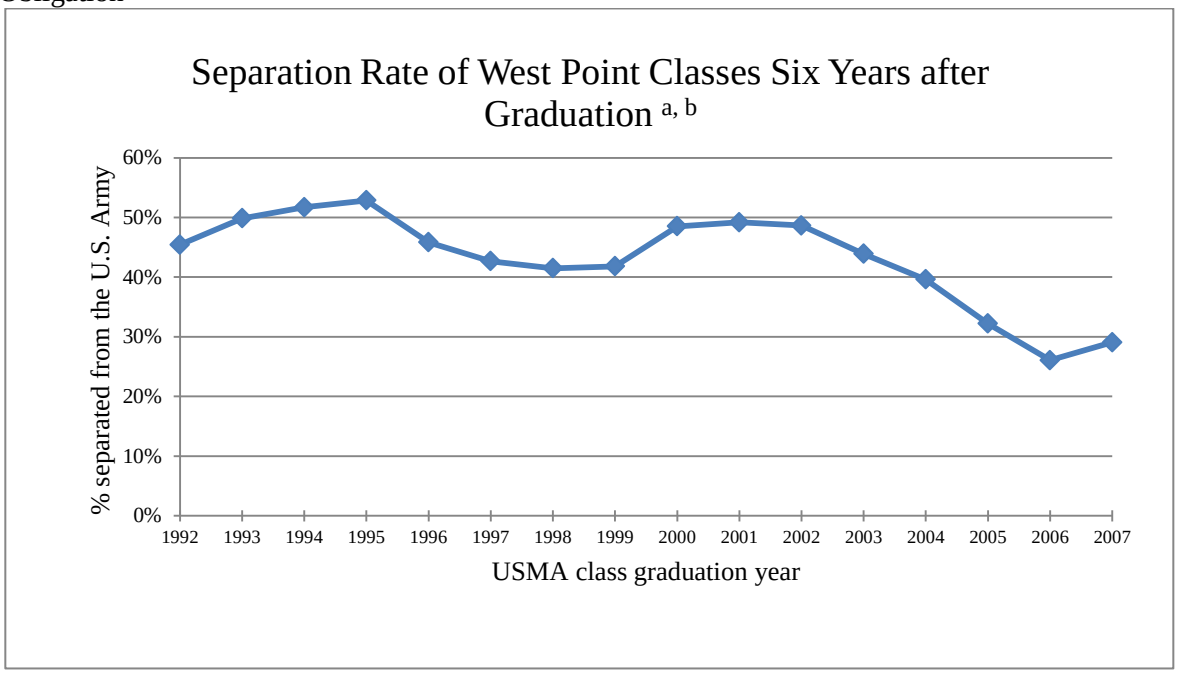
consistent program of instruction at the three commissioning sources, the extrapolated cost estimates in 2013 dollars would be $430,000 per West Pointer, $103,000 per ROTC officer, and $28,000 per OCS officer.[53] Since West Point officers are disproportionally likely to lead much of the United States' future wars and deterrence efforts, but potentially cost much more to produce per officer than the Army's other commissioning options, it is important to understand the factors that predict West Pointers' retention dynamics.

Indeed, a large number of West Pointers did not choose to remain in the Army when given the choice. Recent West Point officers have shown substantial rates of voluntary separation after their mandatory five year active-duty service obligation. These high separation rates date to the mid-1980's, where 45 to 50 percent of ROTC and USMA officers were not remaining in the Army past year eight (Office_of_Economic_and_Manpower_Analysis, 2014). This trend continued into the 1990's, where 43 percent of West Point's Class of 1992 had left the force by 1998, just six years after graduation. Looking almost ten years later, 47 percent of West Point's Class of 2001 had left the force by 2007, one of the highest separation rate in decades (Kaplan, 2007). Several authors started referring to the Army's junior officer departure situation in the early 2000's as "the exodus" (Lewis, 2004), though later West Point classes have had more officers choose to stay in the Army beyond their active-duty service obligation.[54] Figure 1 illustrates these trends for the West Point classes studied in this paper.

[53] Different methodologies in calculating commissioned total costs estimate will influence different results. For example, the US Army Office of Economic and Manpower Analysis (OEMA) calculated the costs per officer in 2011 to be $287,000 per West Pointers, $156,000 per ROTC officer, and between $189,000 to $273,000 per OCS officer.

[54] The US Navy is also having retention challenges. Less than 35% of Surface Warfare Officers and Aviators are remaining through their O-4 tours, a record number of SEAL lieutenants left, and 23-post command O-5 (commanders) retired in 2013, where only 5 retired in 2009 (Snodgrass, 2014).

Figure 1: Separation rates for West Point graduates after their five-year Active-Duty-Service-Obligation[55]



[a] Testing after six years of active duty most accurately models those officers who voluntarily resign after or around the completion of their five-year mark.

[b] Also, it is important to note that there are more than just officer tastes driving changes in average turnover with West Point officers during this, or any, period. Two of these changes include variations in the economy and Army policy shocks such as the Career Satisfaction Program (CSP), a personnel program which allows newly commissioned officers more choice in their assignments (location, branch/function, and schooling) in exchange for volunteering for additional years of active-duty service.

A 2003 study of what predicted the retention of U.S. Air Force pilots from 1988 to 1999 found that several demographic and career factors predicted either retention (unemployment rate, deployments) or turnover (age, female) (Fullerton, 2003). It also found that various aircraft specialties within one function, being a pilot, predicted different retention outcomes. This paper expands on this study by expanding the aircraft specialties to vastly different career field (functions) and develops this concept into *functional* human capital. This paper also adds cadet performance levels to the analysis of what predicts future officer turnover.

A 2009 paper examined U.S. Air Force Academy (USAFA) classes of 1986 to 1994 and found that cadets' human capital and performance records predicted later success as officers, measured by a

[55] The source is this study's data. Regarding the chart itself, most officers who get out at the five-year point do not get out on the exact day of their five-year anniversary, but rather separate at time of their and the US Army's mutual convenience during the first part of the sixth year. Therefore, examining data at the end of West Point officers' sixth year of Army service is most useful when analyzing how many officers got out after their five-year-active-service obligation.

conflated promotion-retention dummy variable called *career success* (Rodriguez, 2009). The author found that cadet academic GPA, cadet military performance score, and being commissioned into a "rated" career field such as a pilot, navigator, air battle manager, or flight surgeon all predicted higher likelihoods of officer *career success.* Additionally, the paper found that being a female, an underrepresented minority, or attending the USAFA Preparatory School predicted a lower likelihood of career success.

This paper builds on this earlier study by disentangling retention from performance and parsimoniously studying retention alone, and in more detail. Also, it expands the context to the largest branch of U.S. military service, the Army, and sharpens the focus of the study to the highest potential officers. In other words, the previous study indirectly examined what predicts turnover for average-performers, and this paper focuses on what predicts turnover for high performers. Finally, this paper adds a setting effect, in that the officers from the time period I studied (West Point Classes of 1992 to 2004) primarily experienced the military during the high deployment period of 1996 to current day[56], as opposed to the officers Rodriguez studied, who experienced the military during an overall less active period of American military activity.

This paper is organized as follows. First, I review the scholarly turnover and high-potential literatures, using them to establish seven hypotheses about what factors predict the turnover of high-performers. Data is then described and analyzed with respect to each of the hypotheses and the findings discussed. Next, I discuss the findings and suggest their implications, limitations, and contributions, as well as potential areas of future research. The final section of the paper is tilted *Robustness Checks and Alternative Explanations,* where I test the robustness of the original findings against alternative research designs, and also check for additional factors that could significantly influence turnover, such as deployments, years under force-distributed rating systems, family status, and macro-economic trends.

Literature & Hypotheses

[56] Most of the officers in this dataset likely served one or more extended tours in contingency operations in Bosnia, Kosovo, Afghanistan, Iraq, and other deployed locations.

Foundational Theories & Consequences of Turnover

Understanding how and why people choose to stay or leave can improve our understanding and management of employee turnover (Morrell & Arnold, 2007). Establishing turnover's seminal theory, March & Simon (1958) posited that turnover was the result of employees asking themselves two questions, "how much do I want to stay, and what are the barriers to my leaving?" Since that time, there have been over 1,500 studies published on turnover (Holtom, Mitchell, Lee, & Eberly, 2008), many attempting to present complex turnover models to predict retention behavior. Yet the field remains without a uniformly accepted model that robustly predicts outcomes across most domains. Hirschman's (1970) labor economics-based work expanded on March & Simon's theory by showing that disgruntled employees really only have two choices for reconciling their frustrations, to voice their concerns or leave the organization through turnover.

Next, scholars explained that turnover decisions were processes that happened over time, and typically not just discrete decisions made on the spot. Price's turnover model (1977) posited that the interactions between job opportunities and job satisfaction were the *a priori* inputs to employees later quitting their organizations. Mobley's comprehensive turnover model (1977) built on this idea by segmenting a turnover decision into a five-stage process: considering leaving, evaluating the cost of a job search and the cost of leaving one's current job against the benefits of staying, choosing to search for a new job, comparing alternatives, and finally, assuming an intention to leave.

Realizing that a voluntary turnover decision is indeed a complex phenomenon that happens over time, Steers and Mowday (1981) developed one of the first comprehensive turnover models. They confirmed the dominant role of job market information availability on the barriers to leaving and added several factors that predicted turnover, including job performance, job attitudes beyond satisfaction, and non-work factors that might influence employees' decisions to leave. They also accounted for employees trying to potentially change the situation prior to leaving. Other scholars have empirically tested Steers & Mowday's comprehensive model and statistically shown all of its explanatory variables were significant

predictors of turnover, except for the non-work factors. Nevertheless, Steers and Mowday's model only explained five percent of the variation in employee turnover (T.W. Lee & Mowday, 1987), which is an example of the foundational turnover models' limited explanatory power. Indeed, finding a robust predictor of turnover remains a very idiosyncratic, complex, and dynamic challenge (Morrell & Arnold, 2007). Despite the wealth of academic studies, turnover remains a fruitful field of management research (Holtom et al., 2008)

High Costs of Turnover. Discovering what factors robustly predict turnover can be a strategic advantage to an organization, as excessive turnover can be a significant cost disadvantage (W.H. Mobley, 1992). Research estimates that just the direct costs of a single turnover event, including separation, hiring, and training, sum up to between 50 percent (Gemignani, 1998) and 200 percent (Bliss, 2013; Boushey & Glynn, 2012) of a worker's annual salary. The indirect costs of turnover are more difficult to quantify, as productivity and intellectual capital losses (Stovel & Bontis, 2002) are far more difficult to measure, even though they might be the most important. Potential additional costs include loss of organizational memory, lowering of morale of the remaining employees, loss of social capital, and potential negative effects on culture (Dess & Shaw, 2001). For example, Darmon (1990) found that voluntary turnover of salesmen cost a company an average of $50,750 per departing employee in 1990, which would be equivalent to $90,812 today (CMG, 2013). Additionally, the costs associated with turnover are increasing at a higher rate than many other organizational costs. As an illustration, a study found that the financial costs of turnover have risen nearly 400 percent from 1983-2000 (Hinkin & Tracey, 2000), where inflation rose only 173 percent in the same period (US_Bureau_of_Labor_Statistics, 2013).

In addition to being costly, all competitive organizations are at risk of dysfunctional turnover. Dysfunctional turnover is when the best employees leave, while the worst employees stay. This process hurts organizations through reduced productivity, reduced pace of implementing change, and lethargic

innovation (Abbasi & Hollman, 2000). Clearly, all turnover is costly, but dysfunctional turnover weakens organizations over time.

Possible Benefits of Turnover. Just because it is costly does not mean all turnover is bad for the organization or the departing employee (Williams, 1990). Indeed, turnover can have benefits for organizations (Dalton & Todor, 1979). Notably, turnover can enable innovation by bringing "new blood" into organizations and allowing the organization to better react to internal demands and external pressures (Grusky, 1960, p. 105). Also, turnover can displace poor performers while replacing them with high performers and providing opportunities for cost reduction and consolidation (William H. Mobley, 1982). Turnover can also benefit individuals by raising their internal mobility, satisfaction, cohesion, and commitment. For example, departing employees may achieve future benefits such as higher earnings, career advancement, self-development, enhanced feeling of self-efficacy, attainment of non-work values, and a better person-organization fit (William H. Mobley, 1982).

It is also important to note that a voluntary separation does not mean the employee was dissatisfied. Literature has shown that employees are more likely to leave when they experience non-work shocks (e.g. personal or family emergencies) and when they have better professional opportunities (Baron, Hannan, & Burton, 2001). Indeed, many people who leave their organizations actually enjoy working there, though, on average, their satisfaction is less than those who stayed (Mitchell, Holtom, Lee, & Graske, 2001). Regardless of the specific retention programs and goals of any organization, before spending resources to reduce turnover, an organization should evaluate the comprehensive costs and benefits to see if the net benefits of the turnover intervention program is worth the net costs of implementation (Dalton & Todor, 1979).

March & Simon's First Turnover Factor: Job Satisfaction

Job satisfaction is an operationalization of March and Simon's (1958) turnover theory's first evaluation criteria: how much does an individual employee want to stay? This desire to stay is

operationalized by job satisfaction, whose rates are positively correlated with retention (J.L. Price, 1977; C.O. Trevor, 2001), though leaving a job doesn't automatically mean the employee had low job satisfaction (Baron et al., 2001). Yet, as a construct, job satisfaction is idiosyncratic and complex. In reviewing the literature, I found most predictors of job satisfaction fall into one of four overlapping subcategories: satisfaction with job characteristics, satisfaction with leadership received, sense of social belonging, and satisfaction with compensation. All four of these factors have direct application with West Pointers with respect to their satisfaction with their military jobs' characteristics, satisfaction with their commanders, sense of belonging to their peers and work colleagues, and satisfaction with their military pay and benefits.

Job Characteristics. When evaluating whether employees like their jobs, the specific characteristics of the jobs themselves have significant impact. Dalton & Todor's (1979) meta-analysis showed that job routinization predicts higher turnover, yet job centralization and integration both predict retention. Additionally, retention is improved when employees have opportunities for challenging and interesting work (Baron et al., 2001). Person-Environment (PE) theories, such as Person-Organization Fit (PO) (Kristof, 1996) and Person-Job Fit (PJ) (Edwards, 1991; O'Reilly, Chatman, & Caldwell, 1991) show that when individuals' preferences match the environment provided by their job and organizations, job satisfaction and other positive outcomes result (Carless, 2005).

Leadership Received. People don't necessarily leave their jobs, but they do leave their managers (Buckingham & Coffman, 1999). Indeed, employees' leaders matter in retention decisions. Social Psychologist Richard Hackman wrote that, in addition to accomplishing the organization's objectives/mission, teams should help their people grow, leave the overall health of the organization better than when they arrived, and enhance the individual satisfaction of all members (Hackman, 1990). In a way, this theory inherently makes leaders responsible for the same. Poor leaders certainly can have opposite effects, as disagreeable managerial styles (Abbasi & Hollman, 2000) and toxic leaders (Mitchell

et al., 2001; Tepper, 2000) predict higher turnover. On the other hand, organizational leaders who provide supervisory support (Maertz, Griffeth, Campbell, & Allen, 2007), display individualized concern (Bass & Avolio, 1994; Graen, Liden, & Hoel, 1982), and invest in their subordinates (Allen, Shore, & Griffeth, 2003) have been shown to positively predict retention. Additionally, leaders who effectively communicate with their subordinates positively predict employee retention. Examples include supervisors who provide employees with adequate recognition (Eisenberger, Stinglhamber, Vandenberghe, Sucharski, & Rhoades, 2002) and accurate job expectations (Dalton & Todor, 1979).

In addition to direct impacts on their subordinates' job satisfaction, leaders also have indirect, yet substantial impact on their direct reports' job satisfaction through the personnel and work systems the leaders establish. For example, disagreeable hiring practices predicts turnover (Allen et al., 2003), and an organizations ability to provide its workers with organizational support, such as fairness & growth opportunities, predicts retention (Mitchell et al., 2001). Considering that leaders have both direct and indirect impacts on their subordinate's sense of job satisfaction, a robust way to look at an employees "am I satisfied with the leadership I receive?" question is to measure a subordinate's overall affective commitment towards their supervisors. This affective commitment has been shown to positively predict retention (Vandenberghe, Bentein, & Stinglhamber, 2004).

Sense of Social Belonging. Although leaders have significant influence on their employees' retention decisions, their employees' sense of social belonging at work matters as well. The feeling of "love," a family-like intense emotional bond with the workforce, has been shown to predict retention (Baron et al., 2001).

Compensation. Many scholars have confirmed that compensation influences job satisfaction and turnover (Abbasi & Hollman, 2000; Baron et al., 2001; Card, Mas, Moretti, & Saez, 2010; Dalton & Todor, 1979). Herzberg's (1964) work recognizes the importance of compensation, but limits its impact on job satisfaction by classifying it as a "hygiene factor," something that can cause dissatisfaction if

below an idiosyncratic minimum threshold, but something that does not cause increased satisfaction as the compensation level increases beyond that minimum level. Hence, Herzberg confirms financial compensation matters, but puts boundary conditions around its influence by implying that an organization cannot make up for poor job characteristics, poor leadership, or lack of a sense of social belonging by simply offering more compensation.

March and Simon's Second Turnover Factor: Ease of Movement

After assessing how much one wants to stay in their job (job satisfaction), ease of movement is the second question that an employee must answer when making an idiosyncratic turnover decision (J. G. March & H. A. Simon, 1958). Similarly to assessing job satisfaction, ease of movement is complex in itself and is made up of many potential factors, therefore, I will examine the portability and high-potential literature in more depth.

Portability. Human Capital Theory explains that employees gain both firm specific human capital (FSHC), skills that are only applicable at that organization, and general human capital (GHC), skills and ability that are transferable to other organizations, throughout their educational and professional lifetimes (G.S. Becker, 1962).

Most successful employees attribute their professional successes to their own talents and skills, rather than to the training and context provided for them by their work environment. Therefore, most employees think their skills, and thus their successes, are portable (Groysberg et al., 2008). However, this might not be the case.

Developing GHC makes employees more productive, but since their increased talent is valuable and usable by other organizations, thus it also increases their ease of movement within and outside of the organization. For example, much of the formal and on-the-job training that employee receive while in their organizations, such as leadership training, is readily transferable to other organizations. In this case,

developing general leadership skills may indirectly encourage turnover by providing that employee with more job options outside of the company.

As opposed to GHC, developing FSHC makes an employee more productive in the context of that organization, but does not explicitly increase their ease of movement to other organizations. Examples of FSHC include tactical knowledge and knowledge about how to utilize and maintain proprietary functional systems (logistics, personnel, equipment, and software). Additionally, FSHC includes the tacit knowledge created by close proximity to colleagues (G.S. Becker, 1978). When an employee leaves his or her organization, this "collective mind" (Weick & Roberts, 1993) and individual relationships are not readily replicated in a new employment setting (Groysberg et al., 2008). It follows that the performance of all workers, including high-performers, are functions of both the workers and their organizations, including the talent of the individual, the organizations' capabilities that empower their workers, and the relationships among colleagues (Groysberg et al., 2008). In addition to improving employees' performance, investing in FSHC has been shown to increase their retention (Jovanovic, 1979).

Groysberg, McLean & Nohria (2006) expand Becker's human capital from two to five, including general human capital (management and leadership skills), strategic human capital (cutting costs, navigating market cycles, and championing growth), industry human capital (technical, regulatory, and competitive environment knowledge), relationship human capital, and company-specific human capital (tacit knowledge about how things work, including specific processes and systems). Of these, they found that company-internal relationship human capital and company-specific human capital (such as proprietary management information systems and idiosyncratic processes) do not transfer well. This explains why managers' departures usually result in short term declines in their performance in their new positions, at least until they have time to develop company-specific skills in their new jobs. Strategic human capital, such as expertise with cost cutting and navigating cyclic markets, was found to transfer well (Groysberg et al., 2006).

High-Potential Employees. In the scholarly and business literature, the term "best and brightest" has often been used synonymously with "stars" or "high-potentials" (HI-POs), employees organizations believe are most likely to be their future leaders (Fernández-Aráoz et al., 2011; Groysberg, 2010; Rosen, 1981).[57] The ability of an organization in assessing and retaining HI-POs is essential to remaining competitive, especially in today's knowledge-economy. Due to the labor market's macro-shift towards knowledge-based and technology jobs, organizations are increasingly focused on the importance of high-quality workers as a competitive advantage (Pfeffer, 1996). This advantage can be lost quickly if the best employees decide to "get out." Therefore, companies interested in the effectiveness of their talent management systems often evaluate if they are retaining their high performers at different rates than their low performers. Similarly, scholars suggest organizations should track the reasons for HI-PO turnover, and act on those causes to minimize future HI-PO losses (Heinen & O'Neill, 2004). This need to retain top talent is of heightened importance in organizations with no lateral entry, because once HI-POs have left, organizations with strict internal labor markets typically cannot get those employees back.

High-Potentials are Disproportionally Valuable. Organizations find it essential to attract stars, as they are disproportionally more valuable and productive than average workers (Ernst & Vitt, 2002; Groysberg et al., 2008; J.E. Hunter et al., 1990; Narin & Breitzman, 1995). Stars often have extraordinary productivity, and are so important that their contributions cannot be made up for with a large number of lower performing workers or technology (Narin, 1993; Rosen, 1981). Additionally, the relative performance of employees in complex jobs has much higher variance than the relative performance of employees in simple jobs, which amplifies the importance of retaining high performing employees (J.E. Hunter et al., 1990). Since leaders are employees who typically deal with complex situations, their leadership can have a multiplicative effect on the productivity of others, making high performing leaders perhaps the most important assets to retain in any organization.

[57] Stars can refer to current performance, but, generally, the terms stars, high-potential, and best-and-brightest are most frequently used in the context of something desirable in the past predicting something desirable in the future.

HI-POs are More Mobile. High-potentials have greater ability to find new employment than average performers (Jackofsky, 1984), as outside organizations pursue high performers and avoid low performers (Lazear, 1984). This ability has been called "movement capital" (C.O. Trevor, 2001). Additionally, high-potential workers are less likely to have barriers to leaving, as outstanding performers they tend to create and nurture networks of colleagues who will continue to contribute to the high-potentials' continued promotions and career success (Burt, 1987; Ibarra, 1995). Also, stars have greater visibility (Groysberg et al., 2008), as they are typically given higher priority projects and responsibilities in which they rise to and exceed expectations. Stars often receive higher regard and rewards, making them stand above their peers in both internal and external labor markets. As a consequence, stars are typically more mobile (Lazear, 1984), and can be less committed to their organizations (Trank, Rynes, & Bretz, 2002). Likewise, the business press has suggested that high-performers leave organizations at higher rates than average performers (Leonard, 2000; Munk, 1998).

High Cognitive Achievers. Cognitive ability is one component of an employee's general human capital (G.S. Becker, 1962; Groysberg et al., 2006) that has been shown to predict turnover. For example, Trevor (2001) found that employees with high cognitive abilities were much more likely to leave their jobs when they felt low job satisfaction as compared to low cognitive ability workers who also felt low job satisfaction. Research has established that cognitive ability can be measured through aptitude tests. Cognitive ability is comprised of various factors (R. L. Thorndike, 1949), including verbal, quantitative, and occasionally technical aptitudes (J.E. Hunter, 1986). Since the Scholastic Aptitude Test (SAT) primarily assesses quantitative and verbal aptitude, and scholars have found that an individual's SAT Score has a high correlations with their IQ (ρ=0.82 [ρ=0.86 corrected for nonlinearity], and ρ=0.48 [ρ=0.72 when corrected for restricted range]) (Frey & Detterman, 2004), I will operationalize cognitive ability with the *SAT Score*. All cadet applicants take the SAT or ACT for admission to West Point, and those who take the ACT have their scores converted to an equivalent SAT score for comparison. Since

employees with higher cognitive abilities are more willing to leave if unsatisfied with their jobs, and cognitive ability can be operationalized by SAT score, this leads to the first hypothesis:

Hypothesis 1: West Pointers' cognitive ability, as represented by total SAT Score, will negatively predict their retention as Army officers.

High Academic Achievers. A young professional's academic record is perhaps the most readily available and easily interpretable indicator of their probable early performance level. Therefore, a new employee's relatively high *Academic GPA* may be a strong signal of high general human capital of cognitive ability and/or work ethic. Since general human capital traits that have a higher portability (Groysberg et al., 2006) than the other forms of human capital, a high *Academic GPA* may result in employees with higher academic grades receiving more job offers than colleagues with lower academic grades. This also holds true with gaining admission to quality graduate schools and access to financial aid when pursuing these options. Clearly, undergraduate grades are one of the major evaluation criteria of Fortune-500 companies and graduate school admission committees. Therefore, West Pointers who had higher academic grades as a cadet will likely have more options outside of the Army, which takes leads to the next hypotheses:

Hypothesis 2: West Pointers' academic performance, as measured by Academic GPA, will negatively predict retention as Army officers.

High Job-Performance Achievers. When compared with lower achievers, high achievers place a much higher priority on challenging and interesting work (Trank et al., 2002). Yet there are different types of high achievers, including high academic achievers and high social achievers, and each has different work preferences.

Leading others is an inherently social activity, enabled by the creation and spending of what leadership scholars call "social human capital" (Scott A Snook, 2013) or "relational human capital" (Groysberg et al., 2006). This social capital is important to effective leadership effectiveness (Day,

2001). Along these lines, Trank, et al.'s (2002) research established that employees with high academic abilities have different work preferences than employees with high social ability, which was measured by demonstrated leadership and involvement in extracurricular activities. High social achievers were shown to have less psychosocial attachment to their employers than high academic achievers, and are therefore even more likely to leave their jobs if their expectations were not met. Though high academic achievers and high social achievers desire increased job challenges to remain with their employers, the high social achievers are more likely to start jobs with higher commitments to their organizations. Additionally, the high social achievers typically have higher expectations for more competitive pay, faster promotions, and more challenging work than their high academic achieving colleagues (Trank et al., 2002). Given that leadership is an act of applying social capital towards influencing others (Scott A. Snook, 2007) and the people with the highest social capital are most likely to turnover, employees who show the most leadership potential may also be the ones who are less committed to remaining with their organizations. Since West Pointers' *Military Development GPAs* include measures of the cadets' job performances in numerous leadership positions, cadets who perform well on these ratings are likely to be the cadets and officers with the highest social capital, thus, the most likely to turnover.

Realistic Job Previews (RJPs). Since leaders may be more likely to have higher turnover than their average peers due to their high social capital, organizations are often interested in ways to increase their chances of retaining them. Realistic job previews (RJPs) are deliberate procedures used early in the personnel hiring or selection process to provide employees with positive and negative information about their job opportunities before actually accepting the position (Premack & Wanous, 1985). A meta-analysis of 40 studies showed that RJPs were predicted to both lower voluntary turnover and lower total turnover (J. M. Phillips, 1998). Furthermore, the same review showed that RJPs that were conducted in field settings were more predictive than RJPs conducted in laboratory settings, and that RJPs conducted closest to hiring dates were more predictive.

Since cadets become contractually obligated to serve as Army officers once they choose to start their third (junior) year at West Point, the first two years of cadetship could be considered an RJP for West Point and the Army. In a sense, this job preview continues for seven more years, two final years as a cadet, and five years as an Army officer. If West Pointers decide any time after the start of their junior year that they are not a good fit for the Army, they are unable to act upon this until five years after graduation. Even though cadets are contractually obligated to remain at West Point after the start of their junior year (thus, there are inevitably some cadets that are not interested in a military career), those that are interested can signal their tastes within the military in other ways, such as effort put forth towards their eleven semester/summer cadet jobs and military-related coursework, which are accounted for within their *Military Development GPAs*. Similar to satisfied participants in RJPs accepting job positions, cadets who do well in their *Military Development GPAs* may be signaling their positive tastes for their future employment with the Army.

Since employees with high social capital are predicted to be more likely to turnover, and those who do well at their jobs may be signaling positive tastes in extended RJPs, the combined literature predicts cadets' *Military Development GPAs* will be influential on retention, though in different directions. This leads to the next hypotheses:

Hypothesis 3: West Pointers' Military Development GPAs will predict retention <u>or</u> turnover as Army officers.

Economics: Portability of Superstars

Over a century ago, Alfred Marshall's *Principles of Economics* identified *superstars* as those of high ability who commanded very high rewards for their work (Marshall, 2009). Economist Sherwin Rosen expanded on this perspective of performance by proposing that "a cardinal measure of quality or talent must rely on measurement of actual outcomes" (Rosen, 1981, p. 848) and calls people who dominate the activities in which they engage *superstars* (Rosen, 1981). Since cadets' two most significant graded outputs are their cumulative *Academic GPA* and *Military Development GPA*, West Point

"superstars" are those who performed higher than the majority of their peers in both areas. Therefore, these superstars have higher academic and social human capital than their average performing peers, they likely have more portability. My next hypothesis, which is essentially a joint hypothesis of Hypotheses 2 and 3, is:

Hypothesis 4: West Pointers who are in the top one-third of their classes in both Academic GPA and Military Development GPA are more likely to leave the Army than West Pointers who were not in the top one-third of their classes in both Academic GPA and Military Development GPA.

Economics: Portability and Functional Human Capital

A past study examining 45 CEOs who were military veterans showed that their particular department of service (Army, Marine Corps, Navy, or Air Force) predicted their success (Groysberg, Hill, & Johnson, 2010). Specifically, the authors noted that the Army and Marine Corps emphasize leader flexibility, such as supervising a 40-soldier platoon in conducting a fluid counterinsurgency campaign in a city neighborhood. The authors found this development process produced CEOs who excelled at leading small firms, where they can provide vision and empower others to accomplish it. Additionally, the authors noted that the Navy and Air Force emphasize leader-process thinking and oversight of major technical systems, such as running submarines and fighter wings. The authors found this produced CEOs who performed better in regulated industries that took a process-based approach to change (Groysberg et al., 2010).

Groysberg, et al. (2008) found there were five different categories of human capital. In order of decreasing portability, they are general management, strategic, industry, relationship, and company specific. For the purposes of this study, perhaps the military is best looked at as a separate "industry". West Pointers who join the civilian workforce after their active-duty service obligation depart the Army with large amounts of general management developed human capital, such as small-organization leadership and people-management skills. Since most West Pointers, especially those early in their

careers, have experienced similar leadership training and leadership roles, this general management human capital is not strongly differentiated among individual West Pointers.

However, this paper may extend Groysberg, et al.'s (2008) five-category model of human capital by introducing *functional* human capital as a portable source of skills. West Pointers' active-duty Army branches, such as Infantry, Signal Corps (communications), Quartermaster (logistics), Aviation, and Engineers could be considered "functions" within the military/Army "industry" that translate into differing levels of portability among officers. For example, West Pointers who entered technical-based Army branches, such as Medical Service, Finance, Quartermaster, and Signal Corps, learn skills that are directly related to similar functions in the civilian workforce. Alternatively, West Pointers in the traditional combat arms functions (Infantry, Armor, Field Artillery, Air-Defense Artillery, etc.) learn skills with limited applicability in most civilian firms. Therefore, West Pointers' specific branch of the Army, their specific *function*, may predict their portability, which may influence turnover.

Hypothesis 5: West Pointers' Army branch assignments (functions) predict turnover as an officer. Specifically, being commissioned into technical branches (functions) predicts turnover as officers.

Demographic Effects on Retention (hybrid of job satisfaction and ease of movement)

Though voluntary turnover remains an idiosyncratic decision, demographics matter. For example, junior employees leave their organizations at a higher rates than senior employees (Mortensen, 1988).[58] When studying turnover dynamics, additional demographics should also be considered, such as the differing experiences of female and ethnic minority employees. Indeed, a study of over 470,000 managers and professionals highlighted that minorities voluntarily leave their jobs more frequently than Caucasians, and women voluntarily leave their jobs more than men during early employment (Hom,

[58] This may be explained because young workers have had less time in the workforce than older employees to have found a job that matches with their interests and skills. Additionally, job availability is more easily communicated today via the internet and the social media it enables. For example, if Starbucks Headquarters in Seattle makes the decision to hire twenty young managers on Monday morning, the internet and online job marketplaces make it reasonably possible that Army officers stationed at Fort Stewart, Georgia, may find out about that opportunity the same afternoon. As younger employees are typically more internet-savvy, they are more likely to have more internet-enabled job market information than older employees.

Roberson, & Ellis, 2008). Although participating in semi-official social events can be fun and relaxing ways for majority of the employees to build team spirit, women and underrepresented minorities may stand out or feel left out, which can be stressful for them (Groysberg, 2010). The same study found women will typically rely more on portable external networks than men, since females are discouraged from getting involved socially with their male counterparts, as such involvement may be misinterpreted. All of this can lead to higher turnover rates for women, as seen in a 1990's study of the U.S. Army (Baldwin, 1996).

A potential source of this additional work stress for women and underrepresented minority men is their perceived tension between their "work identity" and their "off-work identity," where most Caucasian men typically have only one identity all the time (Groysberg, 2010). Since women Army officers make up less than fifteen percent of the officer force, and ethnic minority male officers make up less than twenty percent of the officer force, they are both considered "token" groups (Kanter, 1977). As tokens, they may not be able to form coalitions with enough power to influence policy, which may result in the workplace being perceived as un-welcoming and subject to favoritism. Even highly structured systems designed to ensure meritocratic outcomes for all employees, like the U.S. Army's centralized promotion and selection system, may still (unintentionally) promote discrimination towards minorities (E.J. Castilla, 2008).

Finally, junior employees from underrepresented groups who do not have demographically-similar senior role models in their organizations are more likely to leave (McGinn & Milkman, 2012), a prediction that is further supported with respect to underrepresented women in a study of U.S. Air Force officers (Fullerton, 2003). In the U.S. Army, a junior officer's senior role models are general officers, of which women and minorities have been proportionally underrepresented. As of March 2014, women and minorities only account for 7.4 percent and 20.2 percent of Army general officers, respectively (US_Army_GOMO, 2014), even though they make up 12.8 percent (women) and 30.9 percent (minorities) of the total Army population (DASD, 2012). This shortage of female and minority role models at the elite levels of the Army may discourage high-performing women and minorities by giving

them the impression that the promotion system is not fair, thereby reducing their desire to stay in the organization. This leads to the final hypotheses:

Hypothesis 6a: West Pointers who are females are more likely to leave the Army than West Pointers who are male.

Hypothesis 6b: Hypothesis 6a also holds for HI-POs (when comparing only cadets in the top 1/3 of their classes in both Military Development GPA and Academic GPA/SAT Score).

Hypothesis 7a: West Pointers who are ethnic minorities are more likely to leave the Army than West Pointers who are Caucasian.

Hypothesis 7b: Hypothesis 7a also holds for HI-POs (when comparing only cadets in the top 1/3 of their classes in both Military Development GPA and Academic GPA/SAT Score).

Methods

Data

I perform the analysis using a de-identified archival data set of 14,764 West Point graduates from graduation years 1992-2007 (approximately 900 graduates per class).[59] The data include pre-cadet applicant information, cadet (undergraduate) performance scores, officer (post-graduate) performance measures, and demographics. The cadet applicant data includes the following: SAT scores (verbal and math), whether they were a recruited athlete, and whether they were sent to the West Point Preparatory School for one year prior to gaining full admittance as cadets. The cadet performance data includes the following: their cadet cumulative academic, military-development, and physical fitness grade point averages. Also, the data include a series of twenty yearly retention dummy variables, each for the first day of every year post West Point graduation, indicating whether that officer was still in the Army. Additionally included are the officers' deployment data (length of time deployed) and demographics

[59] The subsequent analysis is for active-duty forces only. Officers in reserve or National Guard status are not considered.

include gender, age, branch of the Army commissioned into after West Point (infantry, armor, signal, etc.), home state of residence before coming to West Point, and West Point graduation year.

Dependent Variables

The study's twenty years of retention data indicate if West Pointers were still on active-duty on the first day of the 12th month, 24th month, 36th month, through the 240th month since they graduated and became officers. For example, if a West Pointer was still on active-duty ten years after graduation, then their $Retention_{Year10}$ *(120 months)* =1. An indicator variable was used to capture this. Likewise, if a West Pointer was no longer in the Army after ten years, $Retention_{Year10}$ =0, and if they could not have reached that point time-wise (e.g. were from the Class of 2007, but 2017 has not yet arrived), then their $Retention_{Year10}$ = "." For example, for officers who graduated and were commissioned on May 30th, 1992, and were still on active-duty one-year later (on May 30th, 1993), their $Retention_{Year1}$ data entry would be a ".". The following day, on June 1st, 1992, $Retention_{Year1}$ would become =1.

Table 1: Summary Statistics for West Point officer retention (for all retention periods)

Variable	Obs	Mean	Std. Dev.	Min	Max
Still in Army after One Year	14,757	0.99	0.09	0	1
Still in Army after Two Years	14,757	0.97	0.16	0	1
Still in Army after Three Years	14,757	0.93	0.26	0	1
Still in Army after Four Years	14,756	0.91	0.29	0	1
Still in Army after Five Years	14,750	0.75	0.43	0	1
Still in Army after Six Years	14,740	0.57	0.50	0	1
Still in Army after Seven Years	13,757	0.48	0.50	0	1
Still in Army after Eight Years	12,926	0.41	0.49	0	1
Still in Army after Nine Years	12,044	0.36	0.48	0	1
Still in Army after Ten Years	11,112	0.33	0.47	0	1
Still in Army after Eleven Years	10,249	0.32	0.47	0	1
Still in Army after Twelve Years	9,302	0.30	0.46	0	1
Still in Army after Thirteen Years	8,400	0.30	0.46	0	1
Still in Army after Fourteen Years	7,469	0.29	0.46	0	1
Still in Army after Fifteen Years	6,532	0.29	0.45	0	1
Still in Army after Sixteen Years	5,667	0.28	0.45	0	1
Still in Army after Seventeen Years	4,779	0.27	0.45	0	1
Still in Army after Eighteen Years	3,889	0.27	0.44	0	1
Still in Army after Nineteen Years	1,905	0.26	0.44	0	1
Still in Army after Twenty Years	1,905	0.25	0.43	0	1

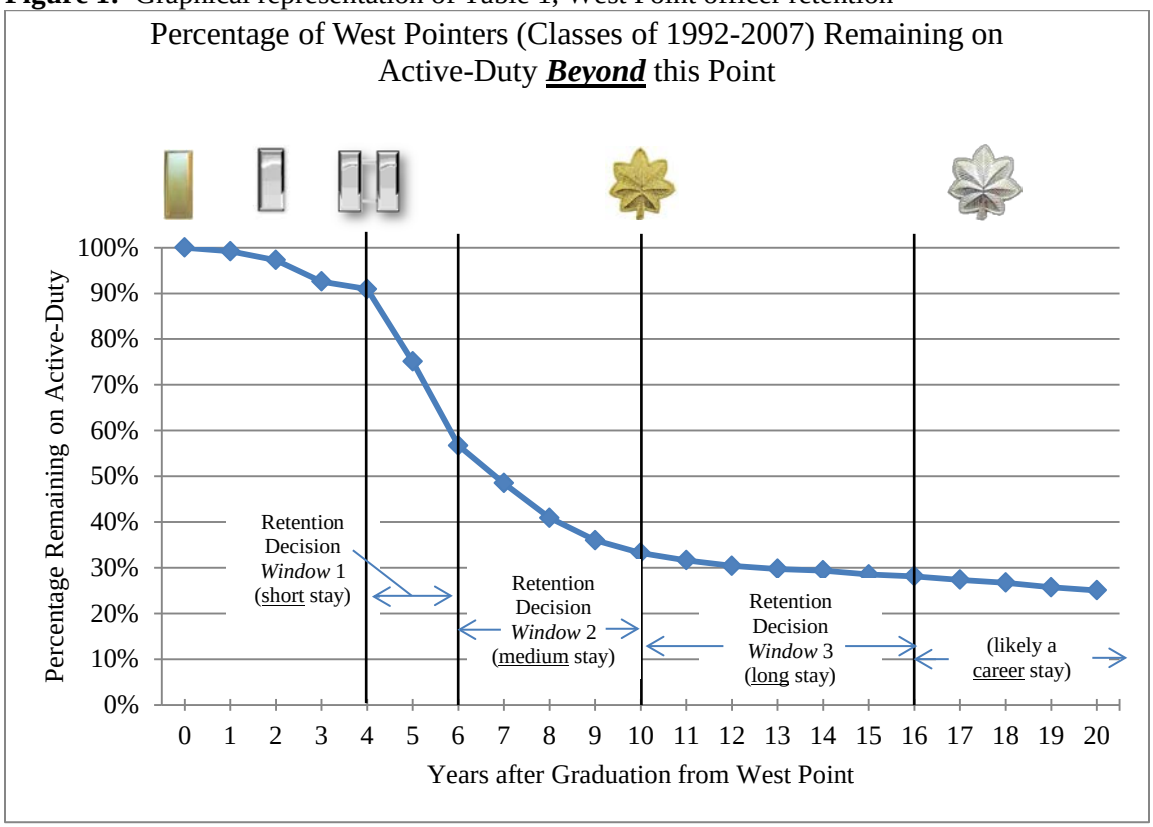
[1] Still in Army after One Year = $Retention_{Year1}$, Still in Army after Two Years = $Retention_{Year2}$, etc.

I chose three time periods to study, based on the typical decision points that most West Pointers face during their careers (see Table 3). Note that there are two generally "flat" areas of the retention curve, years 0 to 4, and then years 10 to 20. The first "flat" period, remaining on active-duty from graduation to the end of year four, is generally explained by the five-year active-duty service obligation of West Point officers. The second relatively "flat" period, years 10 through 20, can be explained by the approaching high utility of the lifelong pension and benefits that the officer becomes fully vested in after twenty-years of active-duty service. The steep slope of the curve in between the two flat areas may be the most interesting windows in which to study the turnover dynamics of West Point officers.

By initially focusing on what predicts a West Pointer will stay beyond a short stay as an Army officer, this paper will examine what happens during the steepest part of this curve. This is when West Pointers have completed their five-year service obligation and are deciding whether to separate or to remain in the Army, typically to serve as a company commander. Next, by focusing on what predicts a

West Pointer will retain beyond a medium stay, this paper helps unpack the turnover dynamics of West Pointers who now must decide whether or not they are going to serve as field grade staff officers (majors) or pursue other options. Finally, by examining what predicts a West Pointer will retain beyond a long stay in the Army, this paper examines which factors, if any, predict West Pointers will depart the service when they are relatively close to securing the significant retirement benefits they are guaranteed after twenty years of service.

Figure 1: Graphical representation of Table 1, West Point officer retention [60, 61]



[60] Though this figure appears, at first glance, to show that a large number of West Pointers separate from the Army during their fourth year of service, this is actually not the case. Most of those officers that appear in the chart to separate during their fourth year are actually separating exactly at the end of their fifth year of service. The data are yearly figures, indicating if an officer is still in the Army a day *past* that point. Therefore, the officers that set the date of their official resignation from the Army at the earliest possible point under (normal conditions), which is the end of five years of service, will show up in the data as no longer being in the Army five years beyond graduation.

[61] The military rank insignias along top of the graph are the ranks that West Pointers (and most active-duty officers) typically achieve at that approximate time of in their careers, should they remain on active-duty. The ranks, from left to right, are Second Lieutenant, First Lieutenant, Captain, Major, and Lieutenant Colonel.

A forthcoming paper (Wrzesniewski et al., (forthcoming)) that studied West Point cadets and officers found nuance in how motives predicted performance and retention. Specifically, they find that internal motives for going to West Point (such as wanting leadership training, self-development, and desire to be an Army officer) predict increased performance and retention when compared to instrumental motives (such as the quality of the intercollegiate athletic program, the ability to get a better job, the opportunity to make more money, and West Point's strong academic reputation). Additionally, the authors found cadets who claimed both internal *and* instrumental motives experience a crowding out (negation) of the positive performance and retention effects expected from their internal motives. Applying this logic to the retention curve in Table 3, cadets who went to West Point for instrumental reasons (and those who went for both instrumental and internal reasons) are likely to make up the majority of those who remained for just a short stay in the Army. It follows that officers who went to West Point for only internal reasons are more likely to have medium, long, or career stays in the Army. In laymen's terms, this research finds that if West Pointers applied to West Point because of the elite benefits associated with it (they equate its reputation with that of Harvard), they are more likely to leave active-duty sooner than West Pointers who applied primarily because they wanted to prepare themselves to serve as Army officers.

The following sections will examine each retention window in more detail.

Retention Decision Window One- just a short stay, or beyond?

The first retention decision West Pointers typically face is whether to leave the Army once their five-year ADSOs have been fulfilled. Historically, between one-fourth to one-half of West Pointers resign from the Army within one year of the completion of their ADSO. Since the data was originally recorded in such a way that officers who leave the Army on the exact last day of their fifth year of service would have a $Retention_{Year5} = 0$, and most West Pointers who decide to leave the Army as soon as possible actually depart over a period within one year of their five-year point, $Retention_{Year6}$ is the

decision point that operationalizes whether or not an officer decides to leave the Army at their first opportunity.

Tables 2 and 3 illustrate that almost ten percent of West Pointers do not complete their five-year ADSO. Reasons vary, but include medical disqualifications, misconduct separations, and periodic voluntary early-out programs.[62] To account for these exceptions and to include appropriate panel-data control variables into the coming analysis (length of time deployed, family demographics) I specify the retention decision window as choosing to retain past year six, if they retained past year four (completed their ADSO). If they stay past a short stay, almost all West Pointers know they will be given the opportunity to become a "company commander," the person directly responsible for an organization of anywhere from 35 to 200 soldiers for a 1 to 2.5 year time period. Serving as a company commander is a highly desirable position for an officer in the Army. Therefore, if a West Pointer stays in beyond a short stay, then they have implicitly made the decision to at least stay in long enough to serve as a company commander. Conversely, following the motives logic (Wrzesniewski et al., (forthcoming)), the officers who choose to leave during this window would be those who came to West Point because they wanted the benefits of an elite academic education (and are not interested in military advancement).

The mean value of $Retention_{Year6 \text{ if } RetentionYear4=1}$ is 0.62. In other words, 38 percent of the West Pointers who stayed past year four left the Army before the end of year six. This means they met their five-year active duty service obligation, but only had a short stay in the Army.

Retention Decision Window Two- just a medium stay, or beyond?

If West Pointers remain in the Army to serve as company commanders, their retention question becomes whether they should depart the Army prior to year ten, which is the approximate time-frame when they can expect the opportunity to be promoted to the rank of major.

[62] When the Army finds it has more junior officers than it needs, it may establishes a voluntary early-out program, where officers are allowed to separate from the Army with no penalty. These early-out programs are unpredictable and typically announced as open for only short windows of time (several months) before closing again. When they exist, they allow some West Pointers who apply for the early-out programs to resign their commissions prior to serving their five years on active-duty. The criteria for accepting an early-out application usually is dependent on that West Pointer's branch's (function) level of junior officer fill at that time.

After serving as a company commander, a higher portability to the civilian job market, personal tastes, and organizational signals may all be the factors that influence West Pointers' decisions on whether or not to retain past a medium stay. First, West Pointers' civilian labor market values are potentially the highest after serving as a company commander because their human capital levels (G.S. Becker, 1962) are relatively high and their barriers to leaving (J. March & H. A. Simon, 1958) are relatively low. In addition to earning a Bachelor of Science degree from an elite institution, West Pointers in this retention decision window also have had the experience of having led 50 to 200 people and being accountable for the application and maintenance of millions of dollars of equipment, frequently across challenging environments. Though some of their Army-trained skills are firm-specific and not portable to civilian organizations, their West Point education and leadership skills are very portable. In comparison to West Pointers who left after just a short stay in the Army, West Pointers who remain in the Army into their second turnover retention decision windows have similar levels of general human capital (West Point's academic training), but much more experiential human capital, as the Army companies they led after year six were typically four times the size as the Army platoons they led from years one to five.

Literature supports the above logic through its unpacking of job rotations, which are ways to acquire skills (MacDuffie, 1995). Most Army officers switch jobs approximately every twelve to eighteen months, more time in service equals more job rotations. Since on-the-job learning is about 70 percent of leadership development (Scott A. Snook, 2007), and this is typically the steepest during the early phase of most jobs, job rotations are one of the best ways to build general human capital. Officers who have stayed in past the first retention decision point will almost always have had more job rotations than those who didn't, and thus more general human capital. Additionally, company commanders are the first officers to have legal command authority, including the authority to approve leaves of absence and the authority to adjudicate certain levels of administrative punishment under the Uniform Code of Military Justice (UCMJ). In summary, an officer who has stayed to become a company commander has had additional job rotations and much more leadership experience, which in turn builds general human capital that is highly portable to civilian organizations.

Secondly, West Pointers' personal tastes, which are preferences coming from their experientially-constructed personal and social capital (Gary S Becker, 1996), affect their turnover decisions. After being a company commander, an Army officer typically serves in a vast variety of subsequent assignments, each of which involve varying and idiosyncratic degrees of desirability for that officer. In other words, they may be assigned to do something very different, either temporarily or permanently, than they have been doing for their first six to ten years. For example, some of the possible post-company command assignments Army officers may receive include offers to attend graduate school (fully-funded), temporary or permanent reassignments into specialty areas such as Psychological Operations or Civil Affairs, an instructor role for West Point or ROTC, or as active-duty advisors to National-Guard units. Depending on each officer's tastes, they may like, not like, or be indifferent to what they are offered in their post-command assignment. Correspondingly, West Pointers' retention decisions during this period are likely influenced by how they feel about the subsequent assignments they are offered.

Third, signals sent by the Army during this time may influence West Pointers' decisions to retain beyond a medium stay. Since the early promotion to major selection board happens between the seventh and tenth year of service, most of the officers in the medium stay window have received the rewards of the early promotion to major promotion selection board. If officers felt they were deserving of this high-potential recognition but were not selected for it, they could interpret that as a signal that they were not doing as well as they wanted to in the Army, or that they are undervalued by the Army. In either case, it is likely to be a negative influence on their retention decisions. On the other hand, if West Point officers expected to be promoted early and actually were, or weren't expecting to be selected for early promotions but were selected, that could engender positive effects on their future retention decision for similar reasons, but from opposite perspectives.

Following the motives logic (Wrzesniewski et al., (forthcoming)), the officers who leave after serving just a medium stay may be a combined pool of those who came to West Point because they wanted an elite education and those who came to West Point because wanted to serve as Army officers.

The mean of $Retention_{Year10 \text{ if } RetentionYear6=1}$ is 0.63. In other words, 37 percent of the West Pointers who stayed past year six left the Army before the end of year ten, thereby having a medium stay in the Army.

Retention Decision Window Three- just a long stay, or beyond?

If West Pointers have retained beyond short and medium stays in the Army, their retention question becomes whether they should depart the Army prior to year 16, which is the approximate time-frame in which they can expect to be considered for promotion for the rank of lieutenant colonel. It is also within 4 years of reaching 20 years of active-duty service, the point where military personnel become eligible for significant retirement benefits.

Conceptually, most West Pointers facing this decision point have most recently been staff officers for a number of years, and have decided (or the Army has decided for them) what their military specialty will be for the remainder of their careers. If an officer decides to stay in past sixteen years, then their perceived total net utility, including their civilian job opportunities and personal impacts thereof, would need to be higher than what they project their perceived total net utility will be if they resign. Officers in this retention decision window have already learned quite a bit about the Army, becoming military-specific and raising the value of their military (industry) capital. Also, many have increasing family concerns adding to their decision-making process, such as aging dependents, an increased taste for stability, and deployment fatigue. Additionally, their relative market value to similarly educated peers many not be as high as it was when they finished company command (years six through ten), as they have been in their organization for much longer, but haven't necessarily built a proportional amount of portable general human capital, because they haven't officially had a leadership role (commanded, in Army vernacular), since company command during the time of a medium stay. Finally, they will have experienced another early promotion event, this time for lieutenant colonel, that serves as a signal of the Army's perceived value of their past performance and future potential.

Following the motives logic (Wrzesniewski et al., (forthcoming)), the officers who leave after serving just a long stay may be a combined pool of those who came to West Point because they wanted an elite education and those who came to West Point because wanted to serve as Army officers.

The mean of $Retention_{Year16 \text{ if } RetentionYear10=1}$ is 0.87. In other words, only 13 percent of the West Pointers who stayed past year ten left the Army prior to the end of year sixteen. Therefore, 87 percent of West Pointers who stayed for a long stay also stayed for a career.

Explanatory Variables

The *SAT Score* is the total Scholastic Aptitude Test (SAT) score from each cadet's West Point application (verbal score + quantitative score). This number is transforms by dividing it by 100, so that the marginal effects of one hundred points of a higher or lower total score on the dependent variables would be apparent in the logistic odds-ratio regression outputs. During this time period, the maximum possible *SAT Score* was 1600, and the lowest possible score was 400 (or 16.0 to 4.0, when transformed). Its mean is 12.67. With a skewness of 0.01, and a kurtosis of 2.94, *SAT Score* appears normally distributed.

Additional explanatory variables include *Academic GPA* and *Military Development GPA* performance metrics, which are all measured on a 4.0 performance scale, based on the following letter and number equivalents: A=4.0, B=3.0, C=2.0, D=1.0, and F=0.0 with 0.33 points being added for a "+" and 0.33 points subtracted for a "-".

Academic GPAs are the cumulative total of each cadet's academic courses' numeric grades, multiplied by the semester hours for that course, divided by their total accumulated credit hours. Each cadet takes approximately forty traditional semester-long academic courses during their four years at West Point. There is no formal forced curve for any within-course or overall *Academic GPA*. Its mean is 2.91. With a skewness of 0.23 and a kurtosis of 2.47, *Academic GPA* appears normally distributed.

Military Development GPAs are based on each cadet's cumulative job evaluations ratings and military course grades over four years. Seventy percent of it is the force-distributed evaluation of the

cadets' job performances in each of their assigned followership or leadership roles during their twelve terms (the eight semesters and four summer training periods). After each of the eleven semesters and summer training periods, cadets receive a military development grade, typically calculated by the following formula- 50 percent from their Tactical Officer, 30 percent from their immediate cadet boss' assessment, and 20 percent from assessments by second and third level cadet bosses (Milan et al., 2002). In finalizing their performance evaluations, "tactical officer and cadet supervisors are instructed to consider 12 behavioral domains in relation to the cadet's leader performance" (Bartone et al., 2009, p. 503). These include duty motivation, military bearing, influencing others, consideration for others, professional ethics, planning and organizing, delegating, supervising, developing subordinates, decision making, and oral and written communication (United_States_Corps_of_Cadets, 1995).[63] Each of the cadets' eleven term military development grades were force-distributed within the graded cadets' platoons (30 cadets) or companies (120 cadets), with only 20 percent of cadets in any class within that group allowed to receive an A, 40 percent of cadets allowed to receive a B, and the remaining 40 percent earning a C or below during each grading event (Milan et al., 2002). Pluses and minuses (e.g. A-, C+) were added or subtracted at the discretion of the supervisors for an additional 0.33 on letter grade's numeric equivalent, and were not subject to further force distribution. This process outputs a single military development grade for each cadet each term or period. The eleven separate military development grades across four years were combined to form the 70 percent job-evaluation component of the data's *Military Development GPA.*

The remaining thirty percent of the *Military Development GPA* are the grades the cadets earn in their yearly military science courses, which while academic in nature, were not as cognitively rigorous as the traditional (non-military) academic courses that constitute their *Academic GPA*. *Military Development GPA's* mean is 3.07. With a skewness of -0.10 and a kurtosis of 2.89, *Military Development GPA* appears normally distributed.

[63] These twelve behavioral domains' construct validity were verified in a previous study (Schwager & Evans, 1996).

The United States Military Academy Preparatory School (USMAPS) was located at Fort Monmouth, NJ, during the period of this study. *Prep School* is a dummy variable, defined to take a value of 1 if cadets attended USMAPS for the year prior to coming to West Point, and a 0 if they did not. Its mean is 0.14.

Control Variables

A cadet's physical fitness grade point average (*Physical GPA*) is calculated with 50 percent of the grade being from instructional coursework (such as gymnastics, swimming, boxing for men, close quarters combat for women), 30 percent being from semi-annual physical fitness test scores (push-ups, sit-ups, two mile run, and indoor obstacle course), and 20 percent being from a competitive sport index (giving credit to cadets for playing varsity or club sports, and for how well their teams did if they played intramurals). There is no forced curve for *Physical GPA*, and its mean is 2.94. With a skewness of -0.19 and a kurtosis of 2.76, *Physical GPA* appears normally distributed.

Recruited Athlete is a dummy variable, defined to take the value of 1 if that cadet was officially recruited by West Point's Directorate of Intercollegiate Athletics with the goal of matriculation onto one of West Point's intercollegiate sports teams, and 0 if they were not. West Point competes at the NCAA Division-I level in numerous men's and women's sports, some of which include football, basketball, swimming, baseball, hockey, wrestling, softball, track, and cross-country. The mean of *Recruited Athlete* is 0.20.

Female is a dummy variable, defined to take the value of 1 if a female, and 0 if a male. The mean of *Female* is 0.13.

Similarly, the ethnicity control variables (*African-American*, *Hispanic*, *Asian*, and *Native-American*, *Asian)* are dummy variables, defined as having the value of 1 if cadets claim that ethnicity upon entering West Point, and a value of 0 if they do not. If all ethnic dummy variables are equal to 0, they are Caucasian. The mean value of African American is 6.3 percent, Hispanic American is 4.2 percent, Asian American is 5.9 percent, Native American is 0.6 percent, and other ethnicity is 1.0 percent.

The *Year Group* dummy variables are the years each cadet graduated from West Point (1992-2004). Each *Year Group* dummy is defined as having the value of 1 if the cadet graduated with that class, and a value of 0 if they did not. Since other unobserved endogenous effects could possibly influence promotions and selections from year to year, *Year Group* also controls for enterprise-wide Army changes and external shocks from year to year when they were cadets at West Point and when they concurrently later served in the Army. The Class of 2003 had the fewest graduates, with 855; and the Class of 1994 had the most graduates, with 1,023. The mean number of graduates per class was 930. Though different classes could potentially have endogenous factors influencing graduation numbers, differing class sizes are significantly influenced by increasing or decreasing admissions goals for the matriculating class four years prior to that date. These admissions goals are driven by projected future officer needs from the Department of the Army.[64]

Army Branch is a series of 16 dummy variables, each representing one of the Army specialty branches that West Pointers join upon graduation. They are *Infantry* (19.2 percent), *Armor* (11.4 percent), *Engineer* (12.1 percent), *Field Artillery* (12.8 percent), Aviation (12.0 percent), *Air Defense Artillery* (5.0 percent), *Chemical* (0.6 percent), *Signal* (4.9 percent), *Military Intelligence* (7.6 percent), *Military Police* (2.4 percent), *Ordnance* (2.0 percent), *Transportation* (2.1 percent), *Quartermaster* (2.6 percent), *Finance* (0.8 percent), *Adjutant General* (2.2 percent), and *Medical Service* (2.0 percent). Each branch has its own dummy variable, with a 1 meaning the cadet was commissioned into the Army in that branch, and a 0 meaning they were not. During the time period of this study, female cadets could not commission into *Infantry* or *Armor*, but could enter any of the other fourteen branches.

Home Region is a series of six dummy variables, each representing one of the geographical regions for the home address of each officer when they matriculated into West Point, including *West* (15 percent), *Midwest* (21 percent), *Northeast* (27 percent), *Southeast* (21 percent), *Southwest* (12 percent), and outside of the continental U.S., or outside the continental U.S., or *OCONUS* (4 percent).[65] The *Home*

[64] The data does not include numbers of students who started in each West Point class.
[65] OCONUS includes Alaska, Hawaii, Puerto Rico, and US citizens living abroad.

Region dummy variables are equal to 1 if cadets lived in that region when applying to West Point, or equal to 0 if they did not.

There are three deployment control variables, each of which indicates the total number of years that officer spent deployed, measured at the four, six, and ten year marks. $Deployed_{Year4}$ has a mean of 0.63 (after four years of service as an officer, the average West Pointer has been deployed for about seven and a half months, in total), a skewness of 0.38 and a kurtosis of 2.07. $Deployed_{Year6}$ has a mean of 0.89, a skewness of 0.47 and a kurtosis is 2.22. $Deployed_{Year10}$ has mean of 1.27, a skewness of 0.49 and a kurtosis of 2.45.

The summary statistics of the dependent, explanatory, and control variables are presented in Table 4 below:

Table 4: Summary Statistics (for dependent, explanatory, and control variables)

Type	Variable	Obs	Mean	Std. Dev.	Min	Max
Dependent	$Retention_{Year6\ (if\ Retention\ Year4=1)}$	13,404	0.62	0.48	0	1
Dependent	$Retention_{Year10\ (if\ Retention\ Year6=1)}$	5,888	0.63	0.48	0	1
Dependent	$Retention_{Year16\ (if\ Retention\ Year10=1)}$	1,836	0.87	0.34	0	1
Explanatory	SAT Score (total, divided by 100)	14,743	12.67	1.08	7.90	16.00
Explanatory	Academic GPA at West Point	14,719	2.91	0.46	1.18	4.24
Explanatory	Mil. Dev. GPA at West Point	14,714	3.07	0.35	1.52	4.13
Control	Physical GPA at West Point	14,711	2.94	0.42	1.23	4.21
Control	1-Yr USMA Prep School	14,764	0.14	0.34	0	1
Control	Recruited Athlete	14,762	0.20	0.40	0	1
Control	Female	14,764	0.13	0.34	0	1
Control	Minority	14,764	0.18	0.38	0	1
Control	African-American	14,764	0.06	0.24	0	1
Control	Hispanic-American	14,764	0.04	0.20	0	1
Control	Asian-American	14,764	0.06	0.23	0	1
Control	Native-American	14,764	0.01	0.08	0	1
Control	Other Ethnicity	14,764	0.01	0.10	0	1
Control	$Deployed_{Year4}$	14,318	0.63	0.57	0	3
Control	$Deployed_{Year6}$	7,732	0.89	0.76	0	3.5
Control	$Deployed_{Year10}$	3,526	1.27	0.99	0	4.5

Summary statistics for the control variables *Year Group, Army Branch* (infantry, armor, signal, etc.), and *Home Region* are not listed in the above table for brevity.

Next, to examine the data's bivariate statistics, a correlation matrix was run. Of note, several variables are significantly correlated at the $p \leq 0.05$ level. An officer's *SAT Score*, *Academic GPA*, *Military Development GPA*, and *Physical GPA* are all significantly and positively correlated with $Retention_{Year6}$, $Retention_{Year10}$, and $Retention_{Year16}$, with the *Military Development GPA* having the strongest correlation. Attending *Prep School* also has a positive predictive effect, but being *Female* or a *Recruited Athlete* shows negative predictive main effects on retention. The correlation matrix for the dependent, explanatory, and control variables is presented in Table 5 below:

Table 5: Correlation matrix

Variable	Stayed in past year six	Stayed in past year ten	Stayed in past year sixteen	SAT Total Score	Academic GPA	Military Development GPA	Physical GPA
$Retention_{Year6}$	1.00						
$Retention_{Year10}$	0.66*	1.00					
$Retention_{Year16}$	0.60*	0.90*	1.00				
SAT Total Score	0.03*	0.03*	0.04*	1.00			
Academic GPA	0.02*	0.03*	0.05*	0.49*	1.00		
Military Development GPA	0.08*	0.12*	0.13*	0.12*	0.44*	1.00	
Physical GPA	0.05*	0.03*	0.03*	-0.04*	0.28*	0.33*	1.00
1-Yr Prep School	0.01	0.04*	0.05*	-0.25*	-0.25*	-0.01	-0.01*
Recruited Athlete	-0.10*	-0.10*	-0.09*	-0.32*	-0.21*	-0.13*	0.11*
Female	-0.04*	-0.05*	-0.04*	-0.05*	0.00	0.00	0.03*
African-American	0.00	0.01	0.02	-0.22*	-0.19*	-0.10*	-0.06*
Hispanic-American	0.01	0.01	0.01	-0.07*	-0.06*	-0.02*	0.00
Asian-American	0.01	0.00	-0.01	0.10*	0.04*	-0.03*	-0.01
Native-American	0.01	0.01	0.02	0.00	-0.01	-0.02	-0.01
Other Ethnicity	0.00	0.00	-0.01	0.01	0.00	0.01	0.02*
$Deployed_{Year4}$	0.00	-0.02*	-0.01	0.01	0.04*	0.01	0.19*
$Deployed_{Year6}$	0.08*	0.00	-0.03	-0.01	0.01	-0.02	0.17*
$Deployed_{Year10}$	0.12*	0.12*	-0.01	0.00	-0.06*	0.03	0.11*

[1]*p≤0.05

Variable	1-Yr Prep School	Recruited Athlete	Female	Black	Hispanic	Asian	Native-American
1-Yr Prep School	1.00						
Recruited Athlete	0.05*	1.00					
Female	-0.01	0.07*	1.00				
African-American	0.19*	0.02*	0.05*	1.00			
Hispanic-American	0.07*	-0.04*	0.01*	-0.05*	1.00		
Asian-American	-0.02*	-0.05*	0.02*	-0.06*	-0.05*	1.00	
Native-American	0.02*	0.00	0.01	-0.02*	-0.01*	-0.02*	1.00
Other Ethnicity	0.02	-0.01	0.01*	-0.02*	-0.02*	-0.02*	-0.01
$Deployed_{Year4}$	-0.02*	-0.02*	0.00	-0.02*	0.04*	-0.03*	0.00
$Deployed_{Year6}$	-0.02	-0.01	0.02	-0.02	0.03*	-0.02*	0.00
$Deployed_{Year10}$	-0.01	0.00	-0.06*	-0.03	-0.02	-0.05*	-0.01

[1]*p≤0.05

Variable	Other Minority	Stayed in past year four	Stayed in past year six	Stayed in past year ten
Other	1.00			
$Deployed_{Year4}$	0.04*	1.00		
$Deployed_{Year6}$	0.05*	0.85*	1.00	
$Deployed_{Year10}$	0.06*	0.65*	0.78*	1.00

[1]*p≤0.05

To test Hypotheses 1-6, I estimate the probability of West Point officers remaining in the Army until past year six (if they remained past four), remaining in the Army past year ten (if they remained past six), and remaining in the Army past year sixteen (if they remained past ten), to be functions of cognitive ability, performance while at West Point, additional education, deployments, demographic variables, military function (Army branch), and various controls. Each of the dependent variables are binary outcomes, and applying a logit odds-ratio (logistic) regression method allows for direct interpretation of the magnitude of the explanatory variables.[66]

For the first retention period, $Retention_{Year6}$ *if* $Retention_{Year4}$=1, I apply the following logistic (logit odds ratio) model specification (see Table 6 model 7), which I refer to as

Equation 1:

$$Logistic\ (Retention_{Year6}) = \alpha + (\beta_1\ x\ SAT\ Score) + (\beta_2\ x\ Academic\ GPA) + (\beta_3\ x\ Military\ Development\ GPA) + (\beta_4\ x\ Physical\ GPA) + (\beta_5\ x\ Prep\ School\ dummy) + (\beta_6\ x\ Recruited\ Athlete\ dummy) + (\beta_7\ x\ Female\ dummy) + (\beta_8\ x\ African\ American\ dummy) + (\beta_9\ x\ Hispanic\ American\ dummy) + (\beta_{10}\ x\ Asian\ American\ dummy) + (\beta_{11}\ x\ Native\ American\ dummy), + (\beta_{12}\ x\ Other\ Minority\ dummy) + (B_{13}\ ...\ B_{28}\ x\ Army\ Branch\ dummies) + (B_{29}\ldots B_{35}\ x\ Home\ region\ dummies) + (B_{36}\ldots B_{48}\ x\ Year\ Group\ dummies) + (\beta_{49}\ x\ Deployed_{Year4}) + \varepsilon,\ if\ Retention_{Year4} = 1$$

For the second retention window, the likelihood of $Retention_{Year10}$=1 if $Retention_{Year6}$=1, I apply the following logistic model specification (see Table 7, model 7), which I refer to as

Equation 2:

$$Logistic\ (Retention_{Year10}) = \alpha + (\beta_1\ x\ SAT\ Score) + (\beta_2\ x\ Academic\ GPA) + (\beta_3\ x\ Military\ Development\ GPA) + (\beta_4\ x\ Physical\ GPA) + (\beta_5\ x\ Prep\ School\ dummy) + (\beta_6\ x\ Recruited\ Athlete\ dummy) + (\beta_7\ x\ Female\ dummy) + (\beta_8\ x\ African\ American\ dummy) + (\beta_9\ x\ Hispanic\ American\ dummy) + (\beta_{10}\ x\ Asian\ American\ dummy) + (\beta_{11}\ x\ Native\ American\ dummy), + (\beta_{12}\ x\ Other\ Minority\ dummy) +$$

[66] The regression coefficients for logit odds-ratios (logistic command in STATA 13.1) are equal to e^{β} of the traditional logit coefficients. Additionally, the robust standard errors for the logit odds-ratios throughout this paper are all relative to 1.0, not 0. For more information of logistic regression, see (Hosmer Jr et al., 2013).

(B_{13} ... B_{28} x Army Branch dummies) + (B_{29}… B_{35} x Home region dummies) + (B_{36}… B_{48} x Year Group dummies) + (β_{49} x Deployed$_{Year6}$) + ε, if Retention$_{Year6}$ =1

For the third retention window, the likelihood of *Retention*$_{Year16}$=1 if *Retention*$_{Year0}$=1, I apply the following logistic model specification (see Table 8, model 7), which I refer to as

Equation 3:

Logistic (Retention$_{Year16}$) = α + (β_1 x SAT Score) + (β_2 x Academic GPA) + (β_3 x Military Development GPA) + (β_4 x Physical GPA) + (β_5 x Prep School dummy) + (β_6 x Recruited Athlete dummy) + (β_7 x Female dummy) + (β_8 x African American dummy) + (β_9 x Hispanic American dummy) + (β_{10} x Asian American dummy) + (β_{11} x Native American dummy), + (β_{12} x Other Minority dummy) + (B_{13} ... B_{28} x Army Branch dummies) + (B_{29}… B_{35} x Home region dummies) + (B_{36}… B_{48} x Year Group dummies) + (β_{49} x Deployed$_{Year10}$) + ε, if Retention$_{Year10}$ =1

Table 6: Logistic (logit) regression, Equation 1, dependent variable: *Retain beyond a short stay, if completed active-duty service obligation (Retention$_{Year6}$,* if *Retention$_{Year4}$=1)* [67]

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
1-yr Prep School	1.19***	1.26***	1.26***	1.21***	1.20***	1.12*	1.14**
	(0.06)	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)
Recruited Athlete	0.58***	0.64***	0.64***	0.64***	0.66***	0.64***	0.66***
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.04)
Physical GPA	1.27***	0.98	0.98	0.99	0.92	0.96	0.98
	(0.06)	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)
Years Deployed by Year Four	0.81***	0.89**	0.89**	0.90**	0.89**	0.89**	0.89**
	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)
Branch Dummies (16)		added	added	added	added	added	added
Female			0.99	0.99	0.98	0.96	0.96
			(0.07)	(0.07)	(0.07)	(0.06)	(0.06)
African-American				1.34***	1.36***	1.30***	1.34***
				(0.11)	(0.12)	(0.11)	(0.12)
Hispanic-American				1.03	1.05	1.02	1.04
				(0.10)	(0.10)	(0.10)	(0.10)
Asian-American				1.17*	1.18*	1.19**	1.17*
				(0.10)	(0.10)	(0.10)	(0.10)
Native-American				1.37	1.38	1.38	1.37
				(0.35)	(0.35)	(0.35)	(0.35)
Other Ethnicity				1.08	1.08	1.06	1.06
				(0.20)	(0.20)	(0.20)	(0.20)
Military Dev. GPA					1.29***	1.46***	1.49***
					(0.09)	(0.10)	(0.11)
Academic GPA						0.77***	0.73***
						(0.04)	(0.04)
SAT Score							1.05**
							(0.02)
Constant	1.03	1.82***	1.82***	1.71***	0.94	1.22	0.68
	(0.16)	(0.32)	(0.32)	(0.31)	(0.22)	(0.30)	(0.24)
Incremental χ^2	-	1529.6***	0.01	16.40***	18.08***	22.26***	15.81***
Pseudo R^2	0.0283	0.1150	0.1150	0.1160	0.1168	0.1181	0.1183
# Observations	13,307	13,307	13,307	13,307	13,304	13,304	13,295

* p≤0.10, **p≤0.05, and ***p≤0.01

-Controls for all models include *Class Year* and *Geography* dummies. β-values are all in odds-ratio format. Robust standard errors are listed below each β value in (parentheses). Incremental χ^2 is the likelihood-ratio test that the added explanatory or control variables add independently to the previously specified model. Specifically, this tests the likelihood of H_0: independent variable 1 = independent variable 2 = … = 0. The reference group for ethnic dummies is Caucasian.

[67] Equation (7) was also tested using OLS regression and the results were robust to the logit specifications. This test included standardized coefficients (STATA's beta command) for Military Development GPA (β=0.08, p≤0.001), Academic GPA (β= -0.07, p≤0.001), and SAT Score (β=0.01, p≤0.032).

Table 7: Logistic (logit) regression, Equation 2, dependent variable: *Retain beyond a <u>medium</u> stay, if completed at least a <u>short</u> stay, if retained for a <u>medium</u> stay (Retention$_{Year10}$, if Retention$_{Year6}$=1)* [68]

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
1-yr Prep School	1.37***	1.41***	1.40***	1.39***	1.34***	1.35***	1.34***
	(0.11)	(0.12)	(0.11)	(0.11)	(0.11)	(0.12)	(0.11)
Recruited Athlete	0.65***	0.69***	0.70***	0.70***	0.74***	0.75***	0.73***
	(0.05)	(0.05)	(0.05)	(0.05)	(0.06)	(0.06)	(0.06)
Physical GPA	1.06	1.05	1.05	1.05	0.90	0.90	0.89
	(0.07)	(0.08)	(0.08)	(0.08)	(0.07)	(0.07)	(0.07)
Years Deployed by Year Six	0.87***	0.84***	0.84***	0.84***	0.83***	0.83***	0.83***
	(0.05)	(0.05)	(0.05)	(0.05)	(0.04)	(0.04)	(0.04)
Branch Dummies (16)		added	added	added	added	added	added
Female			0.76***	0.76***	0.75***	0.75***	0.75***
			(0.07)	(0.07)	(0.07)	(0.07)	(0.07)
African-American				1.08	1.14	1.14	1.12
				(0.13)	(0.14)	(0.14)	(0.14)
Hispanic-American				1.04	1.06	1.07	1.05
				(0.17)	(0.17)	(0.17)	(0.17)
Asian-American				0.82	0.84	0.84	0.85
				(0.10)	(0.11)	(0.11)	(0.11)
Native-American				1.35	1.40	1.40	1.41
				(0.50)	(0.54)	(0.54)	(0.54)
Other Ethnicity				0.84	0.83	0.83	0.84
				(0.25)	(0.25)	(0.25)	(0.25)
Military Dev. GPA					1.74***	1.72***	1.69***
					(0.18)	(0.19)	(0.18)
Academic GPA						1.03	1.08
						(0.08)	(0.09)
SAT Score							0.96
							(0.03)
Constant	1.05	1.11	1.15	1.16	0.32***	0.31***	0.50
	(0.24)	(0.28)	(0.29)	(0.29)	(0.11)	(0.11)	(0.26)
Incremental χ^2	-	176.55***	8.02***	4.29	34.37***	0.10	7.02***
Pseudo R^2	0.014	0.0368	0.0379	0.0385	0.0424	0.0424	0.426
# Observations	5,823	5,823	5,823	5,823	5,821	5,821	5,816

* p≤0.10, **p≤0.05, and ***p≤0.01

-Controls for all models include *Class Year* and *Geography* dummies. β-values are all in odds-ratio format. Robust standard errors are listed below each β value in (parentheses). Incremental χ^2 is the likelihood-ratio test that the added explanatory or control variables add independently to the previously specified model. Specifically, this tests the likelihood of H_0: independent variable 1 = independent variable 2 = … = 0. The reference group for ethnic dummies is Caucasian

[68] Equation (7) was also tested using OLS regression and the results were robust to the logit specifications. This test included standardized coefficients (STATA's beta command) for Military Development GPA (β=0.12, p≤0.001), Academic GPA (β=0.02, p≤0.39), and SAT Score (β= -0.01, p≤ 0.21).

Table 8: Logistic (logit) regression, Equation 3, dependent variable: *Retain beyond a long stay, if retained for a medium stay (Retention$_{Year16}$, if Retention$_{Year10}$=1)* [69]

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
1-yr Prep School	2.25***	2.45***	2.40***	2.36***	2.29***	2.40***	2.41***
	(0.56)	(0.63)	(0.61)	(0.60)	(0.59)	(0.62)	(0.63)
Recruited Athlete	0.81	0.85	0.86	0.86	0.89	0.93	0.92
	(0.16)	(0.17)	(0.18)	(0.18)	(0.18)	(0.19)	(0.20)
Physical GPA	1.23	1.24	1.24	1.25	1.15	1.12	1.09
	(0.22)	(0.23)	(0.23)	(0.23)	(0.23)	(0.23)	(0.22)
Years Deployed by Year Ten	0.86	0.86	0.85	0.85	0.84	0.85	0.87
	(0.09)	(0.09)	(0.09)	(0.09)	(0.09)	(0.09)	(0.09)
Branch Dummies (16)		added	added	added	added	added	added
Female			0.66	0.65*	0.65*	0.66	0.66
			(0.17)	(0.17)	(0.17)	(0.17)	(0.17)
African-American				1.30	1.34	1.40	1.39
				(0.45)	(0.47)	(0.49)	(0.50)
Hispanic-American				0.76	0.78	0.80	0.80
				(0.25)	(0.26)	(0.26)	(0.26)
Asian-American				0.93	0.96	0.95	0.96
				(0.31)	(0.32)	(0.32)	(0.32)
Native-American				0.61	0.64	0.65	0.64
				(0.42)	(0.44)	(0.44)	(0.44)
Other Ethnicity				-	-	-	-
				-	-	-	-
Military Dev. GPA					1.36	1.25	1.25
					(0.34)	(0.33)	(0.34)
Academic GPA						1.21	1.24
						(0.26)	(0.29)
SAT Score							0.98
							(0.09)
Constant	4.52***	4.04**	4.18**	4.19**	2.00	1.55	1.94
	(2.51)	(2.46)	(2.53)	(2.57)	(1.76)	(1.45)	(2.82)
Incremental χ^2	-	30.58***	2.75*	2.62	1.41	0.80	3.82*
Pseudo R^2	0.017	0.040	0.042	0.043	0.044	0.044	0.044
# Observations	1,791	1,791	1,791	1,789	1,789	1,789	1,785

* p≤0.10, **p≤0.05, and ***p≤0.0

Controls for all models include *Class Year* and *Geography* dummies. β-values are all in odds-ratio format.
Robust standard errors are listed below each β value in (parentheses). Incremental χ^2 is the likelihood-ratio test that the added explanatory or control variables add independently to the previously specified model. Specifically, this tests the likelihood of H_0: independent variable 1 = independent variable 2 = … = 0. The reference group for ethnic dummies is Caucasian. *Other ethnicity* predicts success perfectly (i.e. *Retention*$_{Year10}$=1) and therefore is automatically dropped from the logistic regression.

[69] Equation (7) was also tested using OLS regression and the results were robust to the logit specifications. This test included standardized coefficients (STATA's beta command) for Military Development GPA (β=0.025, p≤0.39), Academic GPA (β=0.23, p≤0.35), and SAT Score (β= -0.003, p≤ 0.78).

Table 9a: Retention decision points (comparison of the full models results from Tables 6, 7, & 8)

	(1)	(2)	(3)
Retention Logit (Odds Ratios)	Retain beyond a short stay, (if stayed past year four)	Retain beyond a medium stay, (if retained beyond a short stay)	Retain beyond a long stay, (if retained beyond a medium stay)
1-yr Prep School	1.14**	1.34***	2.41***
	(0.07)	(0.11)	(0.63)
Recruited Athlete	0.66***	0.73***	0.92
	(0.04)	(0.06)	(0.20)
Physical GPA	0.98	0.89	1.09
	(0.05)	(0.07)	(0.22)
Years Deployed by Year 4/6/10	0.89**	0.83***	0.87
	(0.04)	(0.04)	(0.09)
Female	0.97	0.75***	0.66
	(0.06)	(0.07)	(0.17)
African-American	1.33***	1.12	1.39
	(0.11)	(0.14)	(0.50)
Hispanic-American	1.03	1.05	0.80
	(0.10)	(0.17)	(0.26)
Asian-American	1.16*	0.85	0.96
	(0.10)	(0.11)	(0.32)
Native-American	1.38	1.41	0.64
	(0.35)	(0.54)	(0.44)
Other Ethnicity	1.06	0.84	1.15
	(0.20)	(0.25)	(0.30)
Military Development GPA	1.51***	1.69***	1.25
	(0.11)	(0.18)	(0.34)
Academic GPA	0.72***	1.08	1.24
	(0.04)	(0.09)	(0.29)
SAT Score	1.05**	0.96	0.98
	(0.02)	(0.03)	(0.09)
Constant	0.67	0.50	1.94
	(0.24)	(0.26)	(2.82)
Correctly Classified	64.37%	62.31%	87.23%
Pseudo R^2	0.119	0.0435	0.044
# Obs	13,336	5,816	1,785

* p≤0.10, **p≤0.05, and ***p≤0.01

Controls for all models include *Branch*, *Class Year* and *Geography* dummies. The β-values are all in logistic/odds-ratio format, which is based around 1.0. A number below one is negatively predictive, and a number above one is positively predictive. Robust standard errors are listed below each β value in (parentheses). Correctly classified is a goodness of fit test for the entire model from STATA 13.1 [estat classification, cutoff (.06 showing the percentage of time that model would accurately predict the correct outcome. All models are also controlled for *Year-Group*, *Army-Branch*, and *Home-Region.* The reference group for ethnic dummies is Caucasian.

Table 9b: Retention decision points (comparison of Tables 6, 7, & 8), with standardized variables

	(1)	(2)	(3)
Retention Logit (Odds Ratios)	Retain beyond a short stay, (if stayed past year four)	Retain beyond a medium stay, (if retained beyond a short stay)	Retain beyond a long stay, (if retained beyond a medium stay)
1-yr Prep School	1.14**	1.34***	2.41***
	(0.07)	(0.11)	(0.63)
Recruited Athlete	0.66***	0.73***	0.92
	(0.04)	(0.06)	(0.20)
Physical GPA	0.99	0.95	1.04
	(0.02)	(0.03)	(0.09)
Years Deployed by Year 4/6/10	0.94**	0.87***	0.88
	(0.02)	(0.04)	(0.09)
Female	0.96	0.75***	0.66
	(0.06)	(0.07)	(0.17)
African-American	1.34***	1.12	1.39
	(0.12)	(0.14)	(0.50)
Hispanic-American	1.04	1.05	0.80
	(0.10)	(0.17)	(0.26)
Asian-American	1.17*	0.85	0.96
	(0.10)	(0.11)	(0.32)
Native-American	1.37	1.41	0.64
	(0.35)	(0.54)	(0.44)
Other Ethnicity	1.06	0.84	
	(0.20)	(0.25)	
Military Development GPA	1.16***	1.21***	1.09
	(0.03)	(0.05)	(0.11)
Academic GPA	0.86***	1.04	1.11
	(0.02)	(0.04)	(0.12)
SAT Score	1.06**	0.96	0.98
	(0.03)	(0.03)	(0.10)
Constant	1.52***	1.10	6.30***
	(0.17)	(0.16)	(2.14)
Correctly Classified	64.37%	62.31%	87.23%
Pseudo R^2	0.119	0.0435	0.044
# Obs	13,336	5,816	1,785

* p≤0.10, **p≤0.05, and ***p≤0.01

-Controls for all models include *Branch*, *Class Year* and *Geography* dummies. The β-values are all in logistic/odds-ratio format, which is based around 1.0. A number below one is negatively predictive, and a number above one is positively predictive. Robust standard errors are listed below each β value in (parentheses). Correctly classified is a goodness of fit test for the entire model from STATA 13.1 [estat classification, cutoff (.06)], showing the percentage of time that model would accurately predict the correct outcome. All models are also controlled for *Year-Group*, *Army-Branch*, and *Home-Region.* The reference group for ethnic dummies is Caucasian.

-Table 9b represents the identical analysis as Table 9a, except all the continuous variables, *Physical GPA*, *Deployed Years*, *Military Development GPA*, *Academic GPA*, and *SAT Score* are all standardized (transformed into mean = 0 and standard deviation = 1), to allow comparisons of relative magnitude between continuous explanatory variables.

Analysis

Analyses of Hypotheses 1, 2, & 3: Cognitive Ability and Cadet Performance

This paper's findings of the explanatory variables predictive power are only valid under the assumptions that all of the other independent variables (both explanatory and control) are held constant (at their mean) and that the predictions represent what would be the average result of many samples.

Table 9a consolidates the fully specified models from Equations 1, 2, & 3 over the three retention decision windows in West Pointers' careers.

An examination of the first explanatory variable, *SAT Score*, across the three retention decision windows shows it to be a significant positive predictor of remaining retaining beyond a short stay, but not a significant predictor on the other two retention decision windows. Specifically, a one-unit increase in a West Point cadet's *SAT Score* (one unit = 100 points, so an example of a one-unit increase would be going from a score of 1,270 to a score of 1,370) predicts a 1.05 times (five percent) ($p \leq 0.01$) higher odds of remaining in the Army beyond a short stay. Therefore, Hypothesis 1 is not supported, the opposite effect for the first retention decision window was revealed.

Next, I examine the predictive power of cadets' performances while at West Point. An examination of the second explanatory variable, *Academic GPA*, shows it to be a significant negative predictor of remaining in the Army beyond a short stay, but is not a significant predictor on the other two retention decision windows. Specifically, a one-unit increase in a West Point graduate's *Academic GPA* (for example, going from a below-average 2.4 cumulative *Academic GPA* to an above-average 3.4 *Academic GPA*), predicts a 1.28 times (28 percent) ($p \leq 0.01$) lower odds of remaining in the Army beyond a short stay. Therefore, Hypothesis 2 is supported for the first retention decision window, but not for retention decision windows two or three.

Additionally, West Pointers' *Military Development GPA* was examined and found to be a significant positive predictor of retaining in the Army beyond both a short stay and beyond a medium stay, but not a significant predictor on retaining beyond a long stay. Specifically, a one-unit

increase in a West Point graduate's *Military Development GPA* (for example, going from a below-average 2.6 *Military Development GPA* to an above-average 3.6 *Military Development GPA*), predicts a 1.51 times (51 percent) ($p \leq 0.01$) stronger odds of remaining in the Army beyond a short stay and a 1.69 times (69 percent) ($p \leq 0.01$) stronger odds of remaining in the Army beyond a medium stay. Therefore, Hypothesis 3 is supported for the first two retention decision windows, but not the third.

Next, I examine whether *Academic GPA*, *Military Development GPA*, and *SAT Score* have non-linear predictive power on retention. To do this, *Academic GPA*, *Military Development GPA*, and *SAT Score* are removed from Equation 1 and replaced with two explanatory continuous variables. The first replacement variable was the difference between the officers' individual score and the mean score for their class, which I term their *centered score*. The second replacement variable is the square of that difference, which I term their *centered score squared*. For example, the mean *Academic GPA* for the West Point's Class of 1997 was 2.96. If West Point officers in the Class of 1997 earned an *Academic GPA* of 3.20, their *Academic GPA_centered* = (2.96 - 3.20) = -0.24, and their *Academic GPA_centered_squared*= (-0.24 * -0.24) = 0.576.

Testing the modified version of Equations 1 resulted in the following. For *Retain beyond a short stay*, the only explanatory variable that reflected non-linear effects was *Academic GPA* ($\beta_{Academic\ GPA\_centered} = 0.71$, $p \leq 0.001$; and $\beta_{Academic\ GPA\_centered\_squared} = 1.30$, $p \leq 0.002$).[70] Since the β-coefficients are both significant but in different directions, this is evidence that the per-unit marginal effects of *Academic GPA* decreases as *Academic GPA* gets further from the mean. This non-linearity test is repeated for the *Retain beyond a medium stay* (Equation 2) and *Retain beyond a long stay* (Equation 3) analyses. Neither analysis provides evidence to support the claim that any of the three explanatory variables display non-linear predictive effects for *Retain beyond a medium stay* or *Retain beyond a long stay*.

[70] To be able to claim a variable has non-linear effects, the *centered* variable and the *centered_squared* variable must both be statistically significant. With odds-ratios, if their β-coefficients have different directions (i.e. one less than 1.0 and one more than 1.0), the variable's effects are increased with numbers further from the mean. If they have the same direction (i.e. both below 1.0 or both above 1.0), the variable's' effect is decreased with numbers further from the mean.

Analyses of Hypotheses 4: Turnover of "The Best and the Brightest"

The first paper in this series (Spain, pending) found that West Pointers' *Military Development GPA* was, by far, the strongest predictor of being selected as high-performing officers at each of the three HI-PO identification opportunities (early promotion to major, early promotion to lieutenant colonel, and selection for battalion command). Therefore, assuming the Army's centralized officer promotion and selection system accurately picks the best officers, cadets with the highest *Military Development GPA* could be considered the "best" West Point junior officers.

"Bright" has many possible meanings, including cognitive ability, academic ability, social intelligence, emotional intelligence, etc. For this discussion, I will only examine "bright" in only two contexts. The first is its most parsimonious meaning: cognitive ability, Spearman's g, or IQ. The second is in regards to what may be its most common meaning: academic performance.

But "brightest" may not be most accurately captured by *Academic GPA*, especially if "brightest" is referring to raw cognitive ability (i.e. Spearman's g), which is strongly correlated to *SAT Score*. Additionally, cognitive ability was shown to be the strongest overall predictor of job performance, especially in complex and leadership roles (Pearce, 2009), thus, retaining these individuals is important to organizations to internal labor markets. If one interprets *SAT Score* to be the most accurate operationalization of "bright," then there is evidence that the brightest officers are more likely to stay in the Army ($\beta_{\text{SAT Total}}$=1.05, $p \leq 0.05$) than their peers with lower intelligence (assuming all else is equal). Specifically, if West Pointers have a one-unit (100 points) higher *SAT Score* than their peers with matching demographics and performance data in all of the other areas measured by this analysis, the West Pointers with the higher *SAT Score* are five percent more likely to retain beyond a short stay. Therefore, with *SAT Score* operationalizing "bright," there is evidence that the brightest West Point officers are, on average, more likely to stay in the Army at their first retention decision point.

Conversely, if one interprets *Academic GPA* as best operationalizing "bright," there is evidence that the brightest officers are predicted to get out of the Army ($\beta_{\text{Academic GPA}}$=0.72, $p \leq 0.01$) at higher rate than their average peers. Specifically, if West Pointers have a 1.0 point higher *Academic GPAs* than their

peers with lower *Academic GPAs*, the West Pointers with the higher *Academic GPAs* have 28 percent lower odds of remaining in the Army past year six. Therefore, with *Academic GPA* operationalizing "bright," there is evidence that the brightest West Point officers are, on average, more likely to get out of the Army at their first retention decision point.

The term "best and brightest" implies simultaneous defining qualities. Though there are numerous ways to examine the retention dynamics through these lenses, I will briefly examine what may be the most likely subsets of these possibilities. First, one could be referring to someone who is both a top job performer and top academic performer, or they could be referring to someone who is both a top job performer and who has the highest cognitive ability. To operationalize each of these possible definitions of the "best and brightest," I will divide each West Point class into several distinct performance types. Recognizing that the U.S. Army assigns elite status to the top 20 percent in competitive academic courses and the top 49 percent in annual officer performance evaluations, the approximate mid-point of this is 33 percent, or the top 1/3. Therefore, I will investigate how being in the top 1/3 of a West Point class in both *Military Development GPA* and *Academic GPA* affects retention, as well as how being in the top 1/3 of a West Point class in both *Military Development GPA* and *SAT Score* affects retention. Table 10 describes the nine cadet types.

Table 10: Cadet performance types

	Best 1 (bottom 1/3)	Best 2 (middle 1/3)	Best 3 (top 1/3)
Brightest 3 (top 1/3)	*Brightest & Not Best* 5.0% 9.1%	10.3% 10.5%	*Best & Brightest* *17.8%* *12.2%*
Brightest 2 (middle 1/3)	10.5% 10.6%	*Average performer* *12.5%* *10.8%*	10.2% 11.3%
Brightest 1 (bottom 1/3)	*Not Best & Not Brightest* *17.8%* *13.6%*	10.4% 11.9%	*Best & Not Bright* 5.1% 9.6%

-*Best = Military Development GPA* performance relative to their classmates
-*Brightest = Academic GPA* or *SAT Score*
-The top percentage in each cell is the percentage of West Pointers of that type, if *Academic GPA* operationalizes brightest.
-The bottom percentage in each cell is the percentage of West Pointers of that type, if *SAT Score* operationalizes brightest.

Cadet Performance Types were defined as equal to 1 if the cadets' performance matched that category and equal to 0 if their performance did not. I then applied the following logistic (logit odds ratio) model specifications (based off of Equations 1/2/3):

Equations 4/5/6:

Logistic (likelihood of $Retention_{Year6/10/16}$*) =* $\alpha + (\beta_1 \ldots \beta_9$ *x the Cadet Performance Type dummies) +* $(\beta_{10}$ *x SAT Score) +* $(\beta_{11}$ *x Military Development GPA) +* $(\beta_{12}$ *x Physical GPA) +* $(\beta_{13}$ *x Prep School dummy) +* $(\beta_{14}$ *x Recruited Athlete dummy) +* $(\beta_{15}$ *x Female dummy) +* $(\beta_{16}$ *x African American dummy) +* $(\beta_{17}$ *x Hispanic American dummy) +* $(\beta_{18}$ *x Asian American dummy) +* $(\beta_{19}$ *x Native American dummy), +* $(\beta_{20}$ *x Other Minority dummy) +*$(\beta_{21}$ *x* $Deployed\ Years_{4/6/10}$*) +* $(B_{22} \ldots B_{38}$ *x Military Branch dummies) +*$(B_{38} \ldots B_{50}$ *x Graduation Year dummies) +* $(\beta_{51} \ldots \beta_{55}$ *x Home region dummies) +* ε*, if* $Retention_{Year4/6/10} = 1$.

Table 11: Retention by cadet type (brightest = *Academic GPA*)

Short stay	Best 1	Best 2	Best 3
Bright 3	0.85	0.95	1.01
	(0.09)	(0.08)	(0.07)
Bright 2	0.93	1.00	1.12
	(0.08)	(0.00)	(0.09)
Bright 1	1.01	1.22**	1.47***
	(0.08)	(0.10)	(0.16)

Med Stay	Best 1	Best 2	Best 3
Bright 3	0.88	1.05	1.37***
	(0.13)	(0.12)	(0.14)
Bright 2	0.86	1.00	1.15
	(0.10)	(0.00)	(0.13)
Bright 1	0.97	1.27**	1.21
	(0.11)	(0.15)	(0.16)

Long stay	Best 1	Best 2	Best 3
Bright 3	0.55	0.82	0.86
	(0.20)	(0.26)	(0.24)
Bright 2	1.01	1.00	1.10
	(0.35)	(0.00)	(0.34)
Bright 1	0.65	0.68	0.81
	(0.20)	(0.20)	(0.30)

* $p \leq 0.10$, ** $p \leq 0.05$, and *** $p \leq 0.01$

-The β-values are all in logistic/odds-ratio format, which is based around 1.0. A number below one is negatively predictive, and a number above one is positively predictive. Robust standard errors are listed below each β value in (parentheses). The following variables were included in the regressions but not presented in the table for brevity's sake: *Physical GPA, SAT Score, Prep-school, Recruited athlete, Female,* ethnicity dummies, *Grad year*, military branch dummies, Deployed years, and Home region dummies. This table is the result of three separate regressions. For *Retain beyond a short stay*, $\beta_{Constant}$ = 1.74, p≤0.01, N=13,304. For *Retain beyond a medium stay*, l $\beta_{Constant}$ = 1.59, p≤0.001, N=5,912, and for Retain beyond a long stay $\beta_{Constant}$ = 5.63, p≤0.01, N=1,789. *Average-performer* (*Best2_Brightest2)* is the reference group for each regression, and has a β=1.0 and a standard error =0.

Table 11 presents the results of this analysis from the *Academic GPA* lens. When compared to their average-performing classmates (Best2_Brightest2), West Pointers who graduate in the top third of their class in both *Military Development GPA* and *Academic GPA* are predicted to have a 1 percent increased odds of *Retaining beyond a short stay* (β=1.01, p ≤ 0.90), though the results fail to reach significance. For the *Retaining beyond a medium stay* analysis, West Pointers who graduate in the top third of their class in both *Military Development GPA* and *Academic GPA* are significantly predicted to have a 37 percent increased odds (β=1.37, p≤0.002). For the *Battalion command* analysis, West Pointers who graduate in the top third of their class in both *Military Development GPA* and *Academic GPA* are predicted to have a 14 percent decreased odds (β=0.86, p≤0.69), though the results are not statistically significant. Therefore, if *Academic GPA* best operationalizes "bright," Hypothesis 4, that West Pointers who graduate in the top third of their class in both the *Military Development GPA* and in *Academic GPA*, are more likely to resign than their average performing classmates, is not supported.

Table 12: Retention by cadet type (brightest = *SAT Score*)

Short stay	Best 1	Best 2	Best 3
Bright 3	0.79***	0.92	0.96
	(0.07)	(0.08)	(0.08)
Bright 2	0.86*	1.00	1.04
	(0.07)	(0.00)	(0.09)
Bright 1	0.88	0.91	1.01
	(0.07)	(0.08)	(0.09)

Med Stay	Best 1	Best 2	Best 3
Bright 3	0.81*	0.88	1.26**
	(0.10)	(0.10)	(0.15)
Bright 2	0.74**	1.00	1.12
	(0.09)	(0.00)	(0.13)
Bright 1	0.92	1.12	1.07
	(0.11)	(0.13)	(0.13)

Long stay	Best 1	Best 2	Best 3
Bright 3	0.95	1.05	1.00
	(0.32)	(0.34)	(0.30)
Bright 2	0.89	1.00	0.92
	(0.30)	(0.00)	(0.28)
Bright 1	0.70	0.84	1.40
	(0.23)	(0.25)	(0.47)

* p≤0.10, **p≤0.05, and ***p≤0.01

-The β-values are all in logistic/odds-ratio format, which is based around 1.0. A number below one is negatively predictive, and a number above one is positively predictive. Robust standard errors are listed below each β value in (parentheses). The following variables were included in the regressions but not presented in the table for brevity's sake: *Physical GPA, SAT Score, Prep-school, Recruited athlete, Female,* ethnicity dummies, *Grad year*, military branch dummies, Deployed years, and Home region dummies. This table is the result of three separate regressions. For Retain beyond a short stay, $\beta_{Constant}$ = 2.14, p≤0.01, N=13,295. For Retain beyond a medium stay $\beta_{Constant}$ = 1.62, p≤0.072, N=5,816, and for Retain beyond a long stay $\beta_{Constant}$ = 4.96, p≤0.05, N=1,785. *Average-performer* (*Best2_Brightest2)* is the reference group for each regression, and has a β=1.0 and a standard error =0.

Table 12 presents the results of this analysis from the *SAT Score* lens. When compared to their average-performing classmates (Best2_Brightest2), West Pointers who graduate in the top third of their class in both *Military Development GPA* and *SAT Score* are predicted to have a 4 percent decreased odds of *Retaining beyond a short stay* (β=0.96, $p \leq 0.60$), though the results fail to reach significance. For the *Retaining beyond a medium stay* analysis, West Pointers who graduate in the top third of their class in both *Military Development GPA* and *SAT Score* are predicted to have a 37 percent increased odds (β=1.26, $p \leq 0.047$). For the *Battalion command* analysis, West Pointers who graduate in the top third of their class in both *Military Development GPA* and *SAT Score* are predicted to have no increased or decreased odds (β=1.00, $p \leq 0.98$), though the results are not statistically significant. Therefore, if *SAT Score* best operationalizes "bright," Hypothesis 4, that West Pointers who graduate in the top third of their class in both the *Military Development GPA* and in *SAT Score*, are more likely to resign than their average performing classmates, is not supported.

To more thoroughly analyze Hypothesis 4, an Event Hazard Analysis (EVA) was designed to plot survivor functions against four sets of cadet type variables. A survivor function is the probability that an event has not happened for an individual before time t. The designed survivor functions plots the probability that different types of West Pointers have not left the Army, prior to any given time.

To do so, I created a continuous dependent variable for each officer named *Retention*, which measures how many years the West Pointers in dataset served on active-duty. I also created a dichotomous variable for each officer named *Censor*, and set it equal to zero if their active-duty service is right-censored (in other words, they were still in the Army at the time of the final observation of this retention data, 2012), and equal to one if they had left the Army on or before that time.

To compare the retention dynamics of various cadet types, I defined four groups, first with brightest being operationalized by *Academic GPA*. These include Best & Brightest, Best & Not-Brightest, Brightest & Not Best, and Not Best & Not Brightest. See graphical representation of above in Table 13.

Table 13: Cadet types in terms of "Best and Brightest"

	Best 1 (bottom 1/3)	Best 2 (middle 1/3)	Best 3 (top 1/3)
Brightest 3 (top 1/3)	*Brightest & Not Best*		*Best & Brightest*
Brightest 2 (middle 1/3)		*Average Performing Cadet*	
Brightest 1 (bottom 1/3)	*Not Best & Not Brightest*		Best & Not Brightest

I then used the five cadet type groupings named in Table 13 to plot the survival function using Kaplan-Meier Survival Estimators.[71]

[71] The commands in STATA 13.1 are "sts (retention), failure(censor) id(id)" and then "sts graph, by ([explanatory variable])". The Kaplan–Meier plot estimates the survival function in a series of horizontal steps of declining magnitude. It approximates the true survival function for that population when a large enough sample is taken.

Figure 2: Predicted West Point officer retention (brightest = *Academic GPA)*

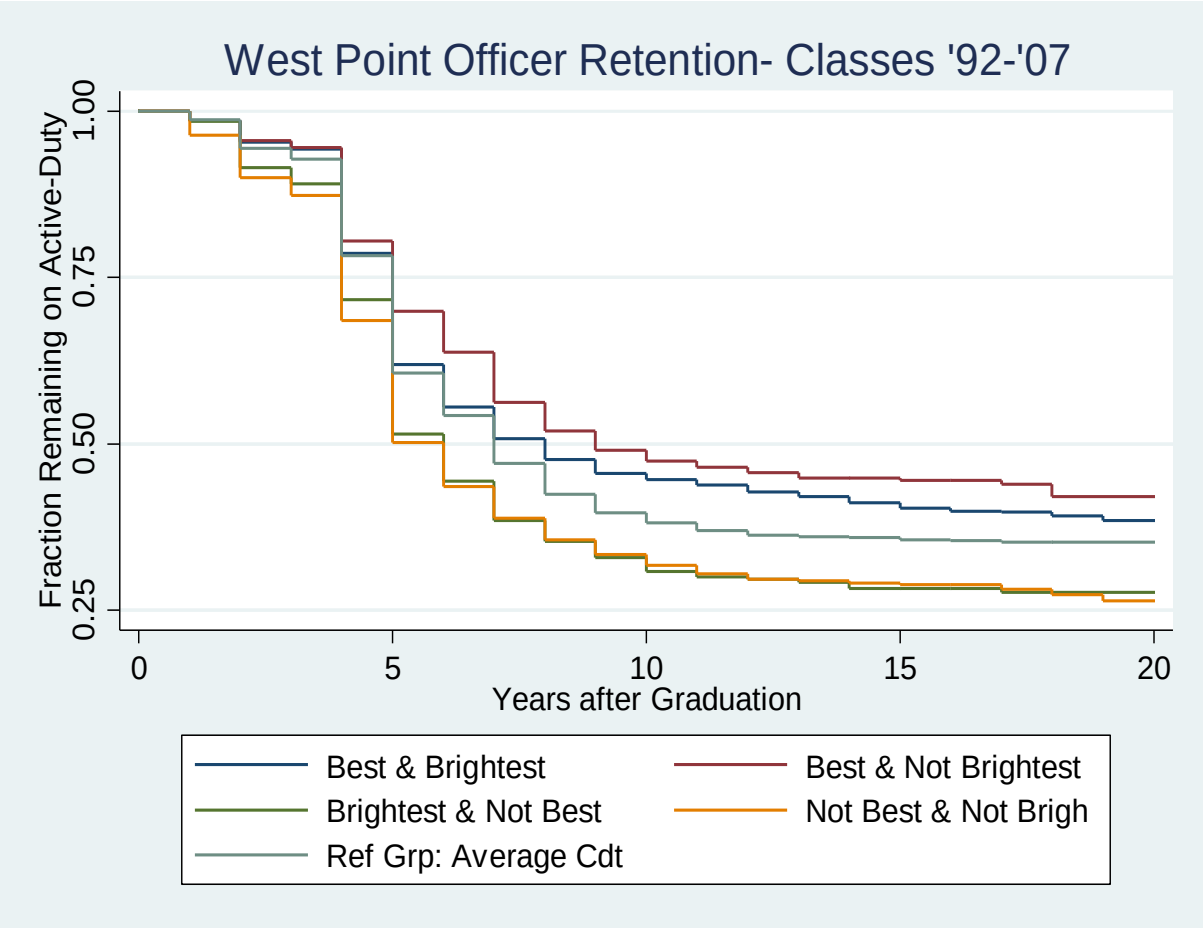


Figure 2 shows that, in terms of likelihood of survival across a career in the Army, when *Academic GPA* was used as the lens for brightness, Best & Not Brightest West Pointers display the highest predicted survival across all/most of the time span, followed by Best & Brightest, then Brightest & Not Best and Not Best & Not Brightest. To confirm the findings that both best and brightest have different turnover dynamics than their peers, I first tested the statistical significance of being best (top 1/3 of class in terms of *Military Development GPA*), which yielded the following results χ^2 (1 d.f.) = 106.58, $p \leq 0.0001$, N=11,715. Next, I tested the statistical significance of being the brightest (top 1/3 of class in terms of *Academic GPA*), which yielded the following results χ^2 (1 d.f.) = 11.53, $p \leq 0.0007$, N=11,723. Therefore, both best, and brightest, when considered separately, influence retention of West Point officers.

To confirm statistical significance between the cadets who are both the best and the brightest when compared to all others, I tested the null hypothesis that the retention effects of Best1_Brightest1 were equal to zero. This yielded the following results. χ^2 (1 d.f.) = 21.85, $p \leq 0.0001$, N=11,739. Therefore, West Pointers who are both best and brightest have different dynamics than other West Point officers.

Then, to confirm there is statistical significance between each of the five cadet types represented by the different plots on Figure 2, a joint-significance test for the five cadet types was conducted simultaneously against the null hypothesis that the difference between each of them is zero. This yielded the following results. χ^2 (4 d.f.) = 162.80, $p \leq 0.0001$, N=6,934. Therefore, each of the five categories of best and brightest are predicted to have different influence effects on the retention of West Point officers.

Figure 3: Predicted West Point officer retention (brightest = *SAT Score*)

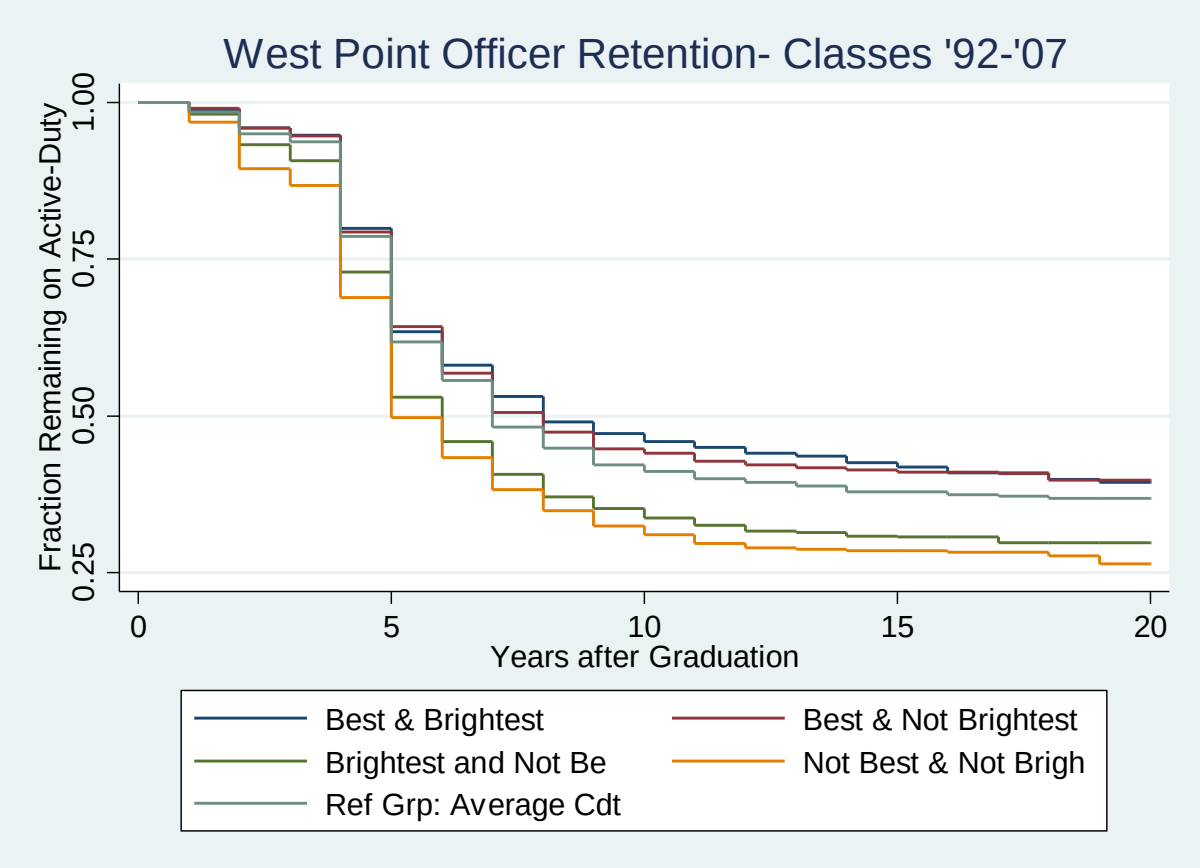


Figure 3 shows that, when *SAT Score* was used as the lens for brightness, Best & Brightest West Pointers display the highest predicted survival across most all of the time span, followed by Best & Not Brightest, then Brightest & Not Best, and, finally, Not Best & Not Brightest.

First, the statistical significance of being the brightest (top 1/3 of class in terms of *SAT Score*) was tested and yielded the following results: χ^2 (1 d.f.) = 106.58, $p \leq 0.0001$, N=11,715. Therefore, brightest, when considered alone, influences retention of West Point officers.

Then, to confirm statistical significance between the cadets who are both the best and the brightest when compared to all others, I tested the null hypothesis that the retention effects of Best1_Brightest1 were equal to zero. This yielded the following results. χ^2 (1 d.f.) = 32.13, $p \leq 0.0001$, N=11,739. Therefore, West Pointers who are both best and brightest have different dynamics compared to other West Point officers.

To confirm there is statistical significance between each of the five cadet types represented by the different plots on Figure 2, a joint-significance test for five cadet types was conducted simultaneously against the null hypothesis that the difference between each of them is zero. This yielded the following results: χ^2 (4 d.f.) = 147.25, $p \leq 0.0001$, N=6,505. Therefore, each of the five categories of best and brightest have different influence effects on the retention of West Point officers.

In summary, the additional "best and brightest" analyses shed additional light on Hypothesis 4. Both the interactive-variable analyses (Tables 11 and 12) and the survival analysis (Figure 2 and 3) provideded strong evidence for rejecting Hypothesis 4, that West Pointers in the top 1/3 of their class in both *Military Development GPA* and either *Academic GPA* (or *SAT Score)*, are more likely to turnover than their classmates who are not as high performing in both areas. In fact, there is evidence that the opposite effects are seen, especially when using *SAT Score* as a lens for brightest.

Analysis of Hypothesis 5: Functional Human Capital (Army Branch)

To develop the retention effects of *functional* human capital, I examine *Army Branch*, which includes the 16 separate military specialty dummy variables. I use the *Engineer* branch as the reference

category.[72] Tables 10 and 11 highlight different turnover dynamics of West Pointers who commission into different branches (functions) within the Army.

In examining the influence of function in the first retention decision window, *Infantry* (β=1.33, $p \leq 0.01$) and *Aviation* (β=8.62, $p \leq 0.01$) are the only statistically significant positive predictors of retaining in the Army beyond a short stay.

Additionally, eleven of the sixteen branches are statistically significant in predicting a decreased likelihood of retaining in the Army beyond a short stay. Of those eleven, *Finance* is the strongest predictor of leaving the Army, with (β=0.33, $p \leq 0.01$). In other words, if a cadet commissions into the Finance branch (function), they have a 67 percent higher odds of leaving the Army after a short stay, than an identical cadet who joined the Engineers.

[72] I choose the *Engineer* branch as the reference category for the following reasons. First, in looking at the retention of West Pointers, Engineer branch was approximately average in percentage of turnover over time. Secondly, Engineer branch was gender-integrated throughout the time period of this study. Third, Engineer branch was one of the top-five most filled branches for West Pointers. Finally, Engineer branch it could be considered to be a hybrid of both combat arms and combat service branches, since it involves both combat engineering and construction roles.

Table 14: Overall retention of West Pointers, by *function*

Army Function	Total Graduates Commissioned[a]	% Still in Army past Six Years[a]	% Still in Army past Ten Years[b]	% Still in Army past Sixteen Years[c]
Engineer	760	56.3%	33.1%	28.3%
Infantry	956	65.7%	44.0%	40.1%
Field Artillery	1,139	39.8%	24.1%	21.2%
Aviation [d]	159	91.3%	44.6%	34.2%
Armor	781	55.1%	36.4%	31.2%
Air Defense	430	41.2%	22.5%	20.7%
Intelligence	566	50.2%	26.8%	21.2%
Adjutant General	186	42.2%	26.6%	24.8%
Chemical	40	50.0%	37.3%	34.2%
Finance	91	27.2%	15.1%	10.0%
Military Policy	151	59.1%	35.4%	27.7%
Medical Service	116	54.3%	34.6%	31.6%
Ordnance	162	43.9%	18.5%	16.1%
Quartermaster	257	33.4%	18.5%	15.0%
Signal	373	47.5%	27.3%	22.9%
Transportation	205	36.1%	21.8%	19.5%

[a] Classes of 1992-2007
[b] Classes of 1992-2004
[c] Classes of 1992-1997
[d] Due to extensive additional training requirements (flight school), Aviation officers have a seven year active-duty service obligation following graduation. All other branches have five year active-duty service obligations.

Table 15: Army functions and predictive retention (logit odds-ratios)

Army Function	Retain beyond short stay		Retain beyond medium stay		Retain beyond long stay	
	$Mean_{t=0}$	$\beta_{t=6}$	$Mean_{t=6}$	$\beta_{t=10}$ [2]	$Mean_{t=10}$	$\beta_{t=16}$ [3]
(Combat Arms)						
Engineer[5]	0.12	-	0.12	-	0.12	-
		-		-		-
Infantry	0.19	1.33***	0.21	1.46***	0.24	2.28**
		(0.09)		(0.15)		(0.79)
Field Artillery	0.13	0.54***	0.09	1.30**	0.09	0.99
		(0.04)		(0.16)		(0.39)
Aviation	0.12	8.62***	0.19	0.59***	0.17	1.05
		(0.85)		(0.06)		(0.86)
Armor (tanks)	0.11	0.89	0.11	1.51***	0.12	1.98*
		(0.06)		(0.18)		(0.72)
Air Defense	0.05	0.56***	0.04	0.98	0.04	0.74
		(0.05)		(0.17)		(0.19)
(Combat Support)						
Military Intelligence	0.08	0.74***	0.06	0.98	0.05	1.33
		(0.06)		(0.14)		(0.73)
Signal (communications)	0.05	0.69***	0.04	1.24	0.04	1.51
		(0.06)		(0.21)		(0.97)
Military Police	0.02	1.07	0.03	1.14	0.02	2.46
		(0.13)		(0.22)		(1.90)
Chemical	0.01	0.75	0.00	1.69	0.01	1.23
		(0.18)		(0.75)		(0.47)
Quartermaster (supply)	0.03	0.43***	0.02	1.09	0.02	0.75
		(0.05)		(0.25)		(0.30)
Transportation	0.02	0.49***	0.01	1.37	0.02	1.09
		(0.06)		(0.34)		(1.33)
Ordnance (maintenance)	0.02	0.66***	0.02	0.55***	0.02	0.70
		(0.09)		(0.12)		(0.38)
Adjutant General (personnel)	0.02	0.57***	0.02	1.18	0.02	0.88
		(0.08)		(0.28)		(0.22)
Medical Service	0.02	0.83	0.01	1.53	0.02	0.58
		(0.12)		(0.43)		(0.27)
Finance	0.01	0.33***	0.00	0.94	0.00	1.41
		(0.07)		(0.42)		(0.84)

[1] *p≤0.10, **p≤0.05, and ***p≤0.01. Significance is calculated in comparison to the reference (base) branch, *Engineer*.
[2] $\beta_{t=10}$ is conditioned on having stayed in past six
[3] $\beta_{t=16}$ is conditioned on having stayed in past ten years
-Each of the above regression coefficients (βs) are from Equations 1, 2, & 3 (controlled for *SAT Score*, *Academic GPA*, *Military Development GPA*, *Physical GPA*, *Prep-School*, *Recruited Athlete*, *Female*, *Ethnicity Dummies*, *Home Region Dummies*, and *Class Year)*

In evaluating the predicted effect of *Army Branch* on the second retention decision (remaining in the Army beyond a medium stay), three branches predicted retention: *Infantry* (β=1.46, $p \leq 0.01$), *Field Artillery* (β=1.30, $p \leq 0.01$), and *Armor* (β=1.51, $p \leq 0.05$), and two predict turnover, including *Aviation* (β=0.59, $p \leq 0.01$) and *Ordnance* (β=0.55, $p \leq 0.01$). Notably, *Aviation* and *Field Artillery* switch directions from the direction of their predictions in the earlier decision window. The other predicted changes from the first to the second retention decisions are only of differing magnitudes, and are not significant.

In evaluating the predicted effect of *Army Branch* on the third retention decision, retain beyond a long stay, only *Infantry* (β=2.28, $p \leq 0.01$) and *Armor* (β=1.98, $p \leq 0.10$) are statistically significant predictors of retention, and there are no statistically significant predictors of turnover.

To better evaluate the hypothesis, I then combined the sixteen Army branches into four groups. First, I keep *Engineer* branch as my reference category. Secondly, I keep *Aviation* as its own branch, because a cadet who branches *Aviation* typically must stay in the Army until the completion of seven years of active-duty, to compensate for the advanced training they volunteer to receive (flight school) after commissioning. Thus, *Aviation* officers display different retention dynamics than the other West Point commissioning branches. Next, I combine the remaining *Combat Arms* branches (*Infantry*, *Field Artillery*, *Armor*, and *Air Defense Artillery*) into one dummy variable, *Combat Arms*. Likewise, I combine all the *Combat Support* branches (*Military Intelligence, Signal, Military Police, Chemical, Quartermaster, Transportation, Ordnance, Adjutant General, Medical Service,* and *Finance*) into one dummy variable, *Combat Support*.[73] If a West Point officer was commissioned into any of the four branch categories, including *Engineer* (reference category), *Aviation*, *Combat Arms*, or *Combat Support*, the value for that dummy variable equals one. If not, it equals zero.

[73] Combat Support and Combat Service Support are actually two different Army branch categories. Since branches in both categories are similar in functional skills that have direct civilian organization application, I combined them both into "Combat Support" for this analysis.

Table 16: Army Branch Groups and Turnover (logit odds-ratios)

	Retain beyond short stay[a]		Retain beyond medium stay[b]		Retain beyond long stay[c]	
Army Branch	$Mean_{Year4}$	β_{Year6}	$Mean_{Year6}$	β_{Year10}	$Mean_{Year10}$	β_{Year16}
Engineer (reference)	0.12	-	0.12	-	0.12	-
		-		-		-
Aviation	0.13	14.30***	0.21	0.59***	0.17	0.74
		(1.86)		(0.06)		(0.19)
Combat Arms branches	0.48	0.88**	0.45	1.39***	0.50	1.44
		(0.05)		(0.13)		(0.34)
Combat Support branches	0.26	0.71***	0.22	1.08	0.22	1.06
		(0.05)		(0.11)		(0.29)

*p≤0.10, **p≤0.05, and ***p≤0.01

[a] For retaining beyond a short stay, I ran a STATA 12.1 testparm command (hypothesis test) and find enough evidence to reject the null hypothesis, that the coefficients of $\beta_{Combat\ arms}$ branches and $\beta_{Combat\ Support}$ were equal ($\chi^2_{(2\ d.f.)}$ =33.11, p≤0.0001). Therefore, *Combat Arms* and *Combat Support branches* predict different turnover dynamics in the first decision window.

[b] For retaining beyond a medium stay I ran a STATA 12.1 testparm command (hypothesis test) and find enough evidence to reject the null hypothesis, that the coefficients of $\beta_{Combat\ arms}$ branches and $\beta_{Combat\ Support}$ were equal ($\chi^2_{(2\ d.f.)}$=16.95, p≤0.0002). Therefore, *Combat Arms* and *Combat Support branches* predict different turnover dynamics in the second decision window.

[c] For retaining beyond a long stay I ran a STATA 12.1 testparm command (hypothesis test) and did not find enough evidence to reject the null hypothesis, that the coefficients of the $\beta_{Combat\ arms}$ branches and $\beta_{Combat\ Support}$ are not equal ($\chi^2_{(2\ d.f.)}$ =3.11, p≤0.21). Therefore, I cannot claim that *Combat Arms* and *Combat support branches* predict different turnover dynamics in the third decision window.

-*Combat Arms branches* in this analysis include Infantry, Field Artillery, Armor, and Air Defense Artillery. *Combat Support branches* in this analysis include Military Intelligence, Signal, Military Police, Chemical, Quartermaster, Transportation, Ordnance, Adjutant General, Medical Service, and Finance. *Engineer* is the reference category (i.e. β=0) for the other three function categories.

Comparing *Combat Arms* branches relative to *Combat Support* branches shows West Pointers from *Combat Support* functions are predicted to have higher turnover that West Pointers from *Combat Arms* functions when deciding whether or not to retain beyond a short stay (see Table 16). This trend holds for the first two retention decision windows, though there is not enough evidence to confirm that *Combat Arms* officers and *Combat Support* officers display different turnover dynamics in the decision whether or not to retain beyond a long stay.

A potential challenge to this conclusion is that if factors beyond tastes are correlated with branch choice, selection bias may be confounding the results. For example, if, there was a higher prestige (utility) associated with either *Combat Arms* or *Combat Support* arms during some or all of the studied time period, and higher performing cadets were more likely to choose one over the other, the difference in the retention dynamics could not be as cleanly attributed to the effects of the branches themselves.

To investigate this possibility, I checked to see if there was variance in coefficients of *Combat Arms* and *Combat Support* branches when testing high-performing and low-performing cadets. Logic would dictate that, if cadets were influenced to pick branches due factors related to class rankings, the predictive direction, magnitude, and/or significant of Combat Arms and Combat Support branches would likely show differences when comparing two different ends of the cadet performance spectrum.

For the first set of comparison equations (whether or not to retain beyond a short stay), I conditioned the first regression to include just the top one-third of cadet performers, in regards to Overall GPA[74], the factor that West Point uses to put cadets in a 1 to 1,000 order when choosing their branches.[75] For the second equations, I conditioned the regression to include just the bottom one-third of cadet performers, in regards to Cumulative GPA.

Table 17: Army Branch Groups and Turnover, by Cadet Performance Type (logit odds-ratios)

	Retain beyond short stay		Retain beyond medium stay		Retain beyond long stay	
	(1)	(2)	(3)	(4)	(5)	(6)
Overall GPA	bottom 1/3	top 1/3	bottom 1/3	top 1/3	bottom 1/3	top 1/3
Army Branch	β_{Year10}	β_{Year6}	β_{Year10}	β_{Year10}	β_{Year16}	β_{Year16}
Engineer (reference)	-	-	-	-	-	-
	-	-	-	-	-	-
Aviation	10.35***	17.42***	0.70*	0.54***	0.44	0.77
	(2.51)	(4.04)	(0.13)	(0.09)	(0.27)	(0.34)
Combat Arms	0.73***	1.00	1.32*	1.33*	1.11	1.31
	(0.08)	(0.98)	(0.22)	(0.20)	(0.59)	(0.49)
Combat Support	0.66***	0.68***	1.19	1.06	0.52	1.89
	(0.08)	(0.07)	(0.23)	(0.18)	(0.29)	(0.98)
Constant	0.85	0.053***	0.744	0.042	2.42	57.35
	(0.66)	(0.04)	(0.93)	(0.05)	(9.17)	(176.5)
# Obs	4,323	4,474	1,777	2,019	508	662

*p≤0.10, **p≤0.05, and ***p≤0.01
-The STATA 12.1 Testparm command confirms the regression coefficients for *Combat Arms* and *Combat Support* are different in equations (1) and (2), but cannot confirm they are different in equations (3) and (4), or (5) and (6).

[74] Overall GPA is a West Point figure that is made up of 55% Academic GPA, 30% Military Development GPA, and 15% Physical GPA.

[75] The Department of the Army gives West Point specific quotas of branch slots to be filled annually. During their senior year, the first person in Cumulative GPA (class rank) picks his or her branch, and then the second person in class rank, and then the third. Once all of the slots for a particular branch are taken, no subsequent cadet can take enter branch. Towards the bottom of the class rank, most or all except one branch may be taken, and several of the cadets with the lowest class ranks must pick from whatever branches are remaining. If there is just one branch remaining, the cadet has no choice and gets "branched" into that specialty.

If selection bias were present and related to prestige of *Combat Arms* or *Combat Support branches*, logic dictates that cadets who chose their branches would have different turnover dynamics than cadets who had less input into choosing their branches. Table 17 shows that during the first retention decision window, West Pointers are more likely to retain in the Army if they joined *Combat Arms branches* than if they joined *Combat Support branches*, regardless of whether they were high performing or low performing cadets. This provides evidence that selection bias, if present, is likely minimal, though it cannot be ruled out completely.[76]

Therefore, Hypothesis 5, that being commissioned into technical branches (functions) predicts turnover as officers, is weakly supported for the first retention decisions, but not for retention decision two or three. This provides some evidence for the existence of *functional human capital*.

Analyses of Hypotheses 6 & 7: Demographics

Hypotheses 6a and 7a predict a higher likelihood of turnover for female and ethnic minority West Pointers than their male and Caucasian colleagues. Hypotheses 6b and 7b claim that the effect holds when considering high-performing cadets.

Starting with Hypotheses 6a & 6b, an examination of the control variable *Female* (reference group was males) across the three retention decision points showed it have a statistically significant negative effect during the decision whether or not to retain beyond a medium stay. Specifically, I find that being a female predicts a two percent (β=0.98, $p \leq 0.01$) lower odds of retaining beyond a medium stay. Therefore, Hypothesis 6a is supported for the second retention decision, but unsupported for the other two retention decision windows.

To check Hypothesis 6b, that states that female high-performers are more likely to leave the Army than male high-performers, I used the Event History Analysis (EVA) technique to plot the survivor

[76] To more rigorously test for selection bias, I would need to run a two-stage regression using an instrumental variable that predicts what branch someone chooses but doesn't predict retention.

functions for four groups, female high-performers, male high-performers, female not-high performers, and male not-high performers.

Figure 4: Female West Pointer retention (brightest=*Academic GPA*)

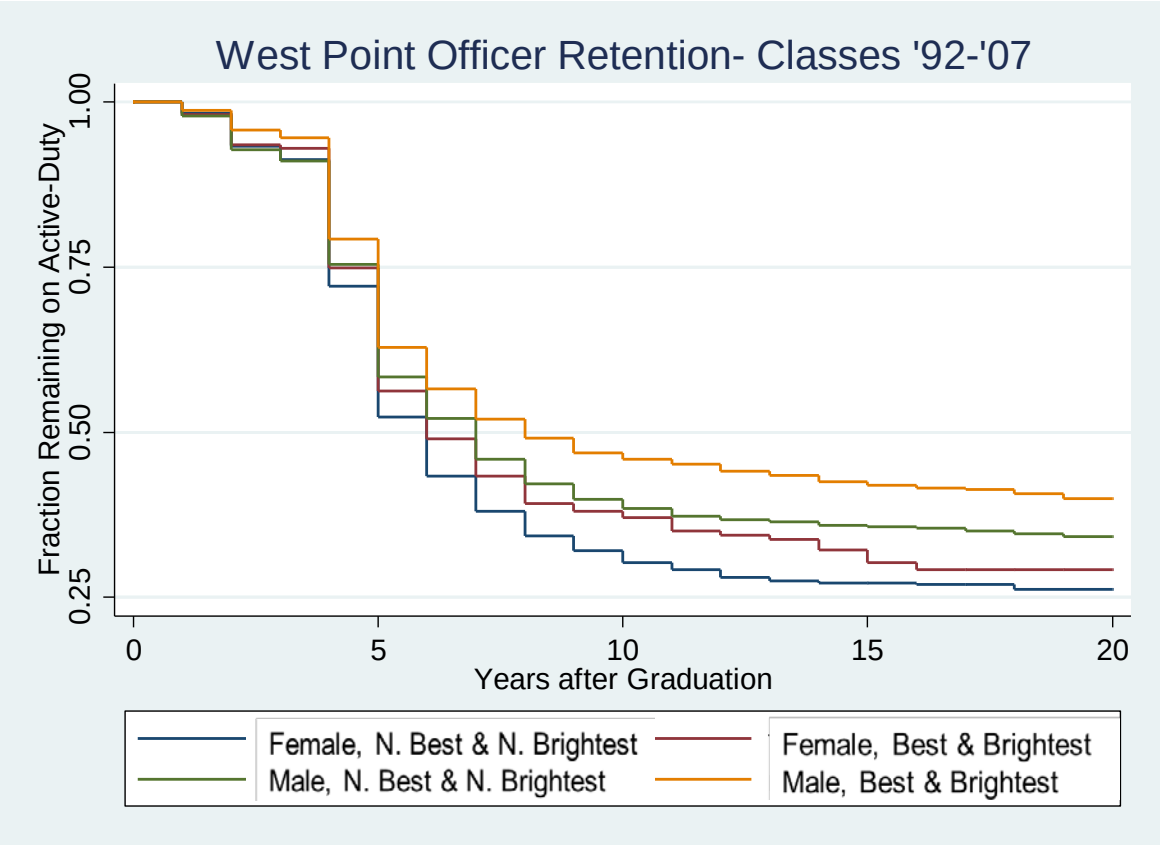


Figure 4 illustrates that female West Pointers who are in the top 1/3 of their class in terms of both *Military Development GPA* and *Academic GPA* have a lower likelihood of retention than male West Pointers who are in the top 1/3 of their class in terms of both *Military Development GPA* and *Academic GPA*. I conduct a joint-significance test for the four cadet types simultaneously against the null hypothesis that the difference between each of them is zero, and this yields the following results: χ^2 (3 d.f.) = 69.73, $p \leq 0.0001$, N=11,739. Next, I specifically test if female high performers have different turnover dynamics than male high performers, and the test yields the following results χ^2 (1 d.f.) = 13.05, $p \leq 0.0003$, N=1,442.

Figure 5: Female West Pointer retention (brightest=*SAT Score*)

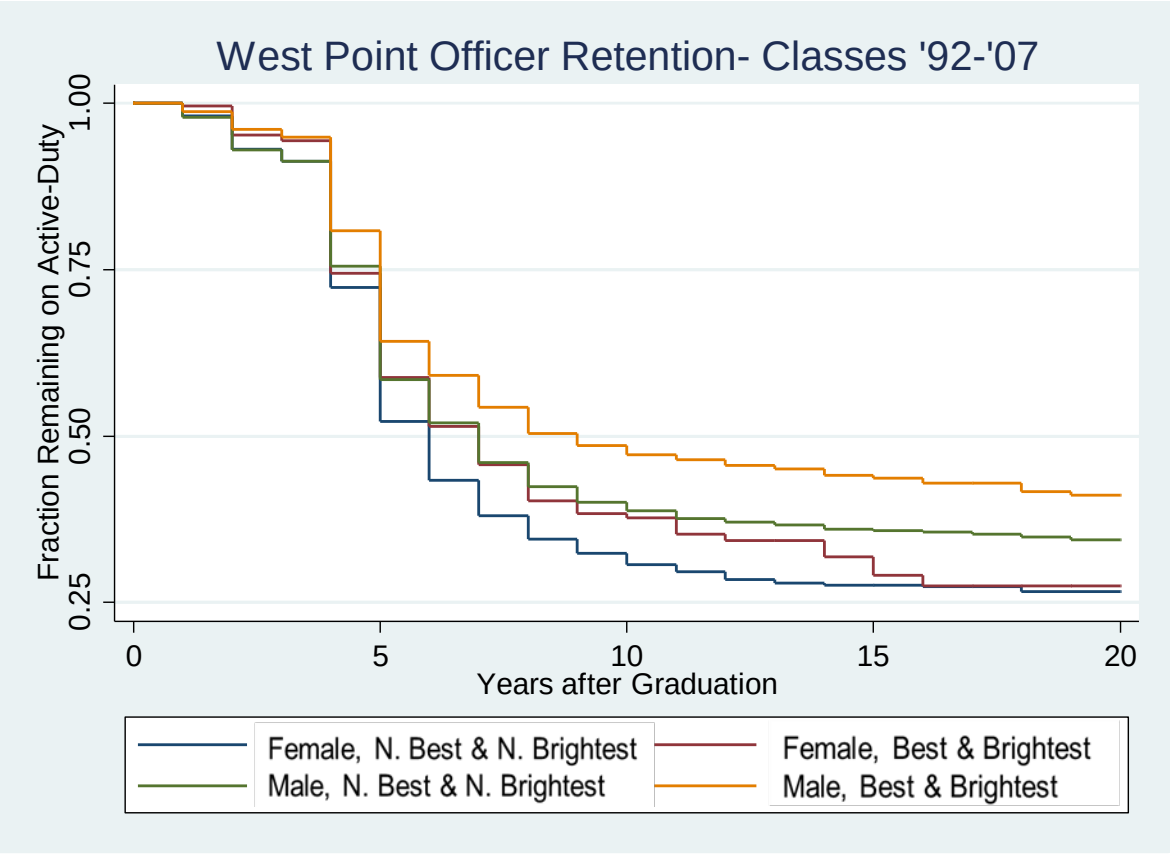


Figure 5 illustrates that female West Pointers who are in the top 1/3 of their class in terms of both *Military Development GPA* and *SAT Score* have a lower likelihood of retention than male West Pointers who are in the top 1/3 of their class in terms of both *Military Development GPA* and *SAT Score.* I conduct a joint-significance test for the four cadet types simultaneously against the null hypothesis that the difference between each of them is zero, and this yields the following results: χ^2 (3 d.f.) = 79.72, $p \leq 0.0001$, N=11,739. Next, I specifically test if female high performers have different turnover dynamics than male high performers, and the test yields the following results χ^2 (1 d.f.) = 10.92, $p \leq 0.001$, N=967.

Since each of the four categories have different influence effects on the retention of West Point officers when using either the *Academic GPA* and *SAT Score* lenses for "brightest," Hypothesis 6b is supported.

Next, I address Hypotheses 7a & 7b. To analyze the retention effects of being a minority officer, the explanatory variables *African-American, Hispanic-American, Asian-American, Native-American*, and *Other Ethnicity* (reference group was Caucasians) were examined across the three retention decisions. The only statistically significant predictive effects during the first retention decision, to *Retain beyond a short stay*, was found only for African-American and Asian-American officers. Specifically, being *African-American* predicts a 33 percent (β=1.33, $p \leq 0.01$) increased odds of retaining beyond a short stay and being *Asian-American* predicts a 16 percent (β=1.16, $p \leq 0.10$) increased odds of retention beyond a short stay.

To further study the effect on minorities, I combine all minority groups into one dummy variable, *Minority*, with a value of 1 meaning the officer is from one of five minority groups, and a value of 0 meaning they are Caucasian. The data has 17,674 observations of *Minority*, and its mean is 0.186. By substituting *Minority* for the five separate minority dummies in Equations 1, 2, and 3, I find the following logit odds-ratio results. Being a *Minority* shows a positive predictive effect of (β=1.20, $p \leq 0.01$) at the first retention decision, no predictive effect at the second retention decision (β=0.99, $p \leq 0.08$), and no predictive effect at the third retention decision (β=1.01, $p \leq 0.21$). Therefore, Hypothesis 7a is unsupported, in fact, I find the opposite effect at the first retention decision window.

To check Hypothesis 7b, that minority high-performers are more likely to leave the Army than male high-performers, the Event History Analysis (EVA) was used technique to plot the survivor functions for four groups, minority high-performers, Caucasian high-performers, minority not-high performers, and Caucasian not-high performers.

Figure 6: Minority West Pointer retention (brightest=*Academic GPA*)

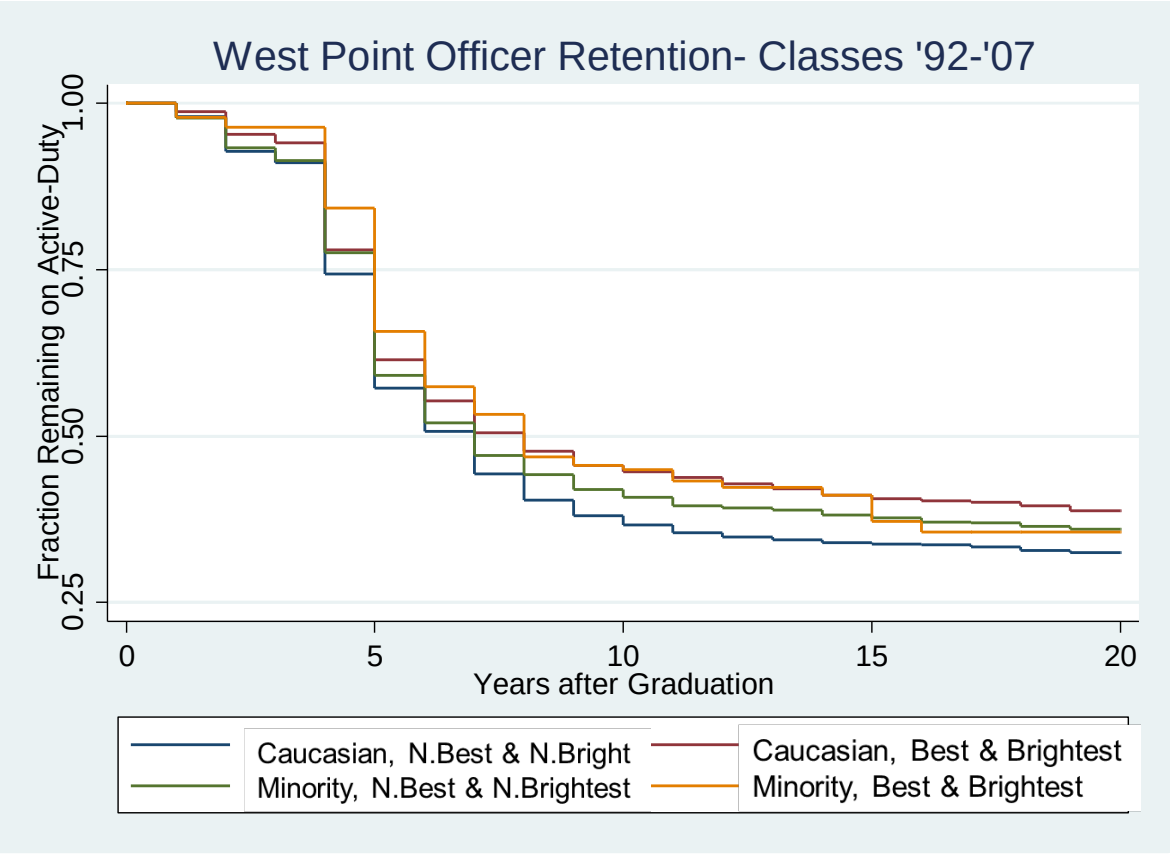


Figure 6 illustrates that minority West Pointers who are in the top 1/3 of their class in terms of both *Military Development GPA* and *Academic GPA* have a lower likelihood of retention than Caucasian West Pointers who are in the top 1/3 of their class in terms of both *Military Development GPA* and *Academic GPA.* A joint-significance test was conducted for the four cadet types simultaneously against the null hypothesis that the difference between each of them is zero, and this yielded the following results. χ^2 (3 d.f.) = 69.73, $p \leq 0.0001$, N=11,739. I specifically test if minority high performers were predicted to have different turnover dynamics than Caucasian high performers, and the test yielded the following results χ^2 (1 d.f.) = 0.18, $p \leq 0.67$, N=1,443.

Figure 7: Minority West Pointer retention (brightest=*SAT Score*)

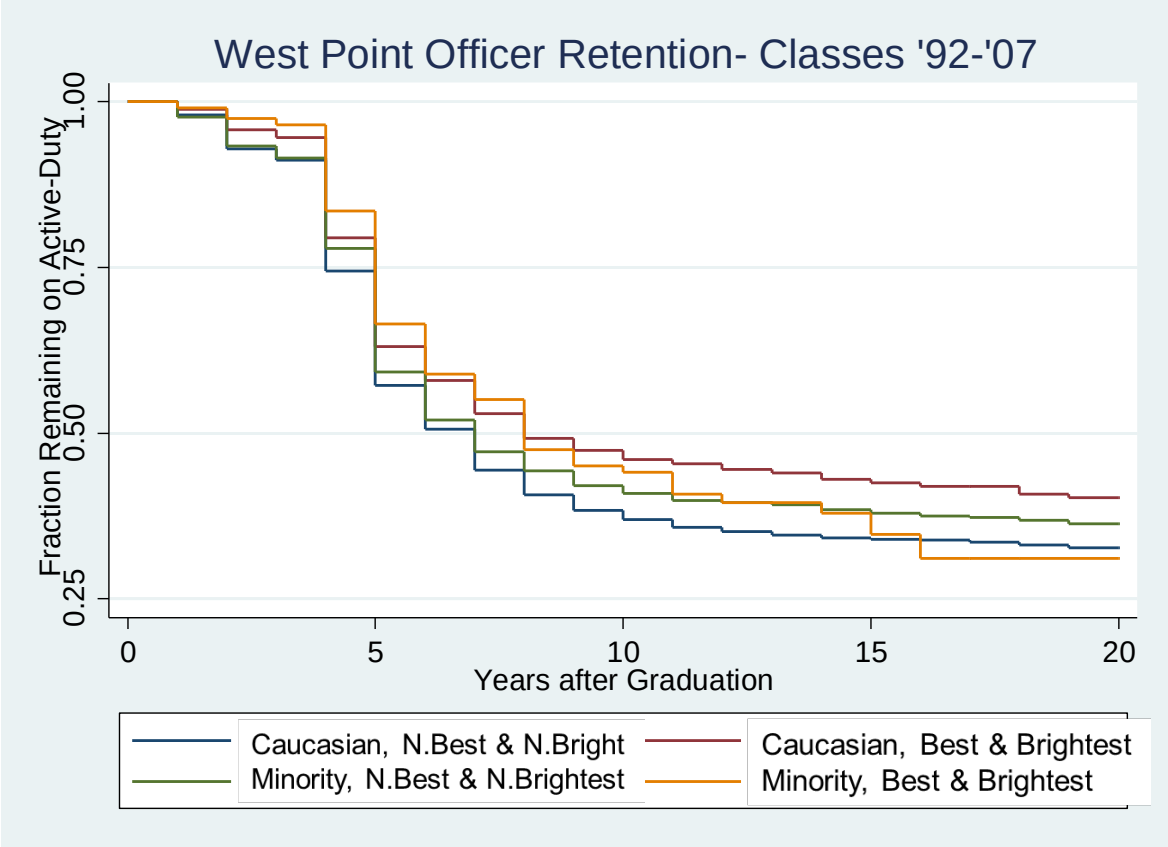


Figure 7 illustrates that minority West Pointers who are in the top 1/3 of their class in terms of both *Military Development GPA* and *SAT Score* have a lower likelihood of retention than Caucasian West Pointers who are in the top 1/3 of their class in terms of both *Military Development GPA* and *SAT Score.* A joint-significance test is conducted for the four cadet types simultaneously against the null hypothesis that the difference between each of them is zero, and this yields the following results. χ^2 (3 d.f.) = 46.51, $p \leq 0.0001$, N=11,739. I then specifically test if minority high performers are predicted to have different turnover dynamics than Caucasian high performers, and the test yields the following results χ^2 (1 d.f.) = 0.23, $p \leq 0.63$, N=967.

There is not enough evidence to claim that minority high performers' retention dynamics are different than Caucasian high performers', regardless of whether I used *Academic GPA* or *SAT Score* as

the lens for "brightest." Thus, Hypothesis 7b, that minority HI-POs experience different turnover dynamics than Caucasian HI-POs, is not supported.

Discussion

The analysis finds that general human capital, past performance, functional human capital, and demographics are valid, yet nuanced, predictors of West Pointers' three retention decisions. Therefore, I discuss the collective findings and attempt to unpack how they likely apply to the turnover dynamics of high potentials in the U.S .Army and similar organizations, especially those with internal labor markets. Though this discussion will consider all three retention decision windows, it will emphasize the findings of the first retention decision: whether or not a West Pointer retain remain beyond a short stay. This decision window has historically seen the highest concentration of officers departing the service, thus provoking the question, "Are the 'best and brightest' Army officers getting out?"

To summarize the findings: Within the sample examined, *Academic GPA* predicts turnover, while cognitive ability (*SAT Score*) and internship performances that are force-distributed (*Military Development GPA*) both predict retention. The "best and brightest" West Pointers are staying in the Army longer than both "average performers" and the "not best and not brightest" West Pointers. When "brightest" examined through the *Academic GPA* lens, the "best and not brightest" retain more than the "best and brightest." In closely examining the construct of "best" and "brightest" as a bivariate classification, the factor that predicts "best" is the primary driver of retention, yet the factors that predict brightest also moderate retention, but in different directions, depending on the lens used to operationalize "brightest." Demographically, female superstars predict higher turnover than male superstars, and minority superstars turnover more than Caucasian superstars in early career stages, but less in later career stages. Finally, having *functional human capital* may predict higher turnover, and this trend holds when examining only superstars.

SAT Score. Contrary to what was predicted by the literature, analysis of *SAT Score*, a variable that operationalizes cognitive ability, predicted retention at the first decision point. One explanation is that brighter officers may have a higher conceptual level (CL), which predicts a person's ability and desire to be in cognitively complex situations (Raphael, Moss, & Rosser, 1979). Therefore, officers with higher *SAT Scores* may want the presumably cognitively complex experience of company command. Upon assuming a typical company command, which usually happens from year six to eight, an officer's level of responsibility typically quadruples, as they go from supervising 30 soldiers to supervising 120, along with the added legal responsibilities for overseeing administrative punishment, leaves and passes, promotions, etc. *SAT Score* is not a significant factor in the latter two retention decision windows, so brighter officers may not feel that staying in the Army to be a staff officer (after 10 years) or to be a lieutenant colonel (staff officer and/or battalion commander, after 14 years) will be as satisfying in terms of increased cognitive complexity. Prior research has established that in competitive labor markets, increased job challenge and career growth opportunities are needed to retain high achievers (Trank et al., 2002). In short, brighter officers may see company command as a challenge worth staying in for, but not the promotions beyond that.

Academic GPA. As this paper hypothesized, *Academic GPA* was a strong negative predictor of officer retention by the end of year six. This could be explained by having lower barriers to exit (J. March & H. A. Simon, 1958). Many prestigious graduate schools seek out military veterans (Nohria, 2013). For example, Harvard Business School's MBA Classes of 2014 and 2015 have approximately 100 veterans (Nohria, 2013), including 44 West Point graduates (Fernandez, 2014). Similarly, many professional search firms recruit junior officers while they are still on active-duty, and then collect a commission for placing them with contracted organizations. Accordingly, *Academic GPA* may be the clearest signal of future performance in high complexity jobs or graduate school, based on the officers' academic performances across four years. Officers with a higher *Academic GPAs* would likely appeal to professional search firms, graduate schools, or businesses to be higher performing candidates than

officers with a lower *Academic GPAs*. For graduate schools, one could argue that test scores (such as the GRE, GMAT, LSAT, MCAT, etc., which are similar to the *SAT Score*) also matter, but organizations and graduate schools know that standardized tests are one graded event, not four years of graded events that most likely include a motivation component. Also, most search organizations and companies do not ask what candidates scored on their standardized tests, but many do ask for their college *Academic GPA*. Therefore, *Academic GPA* may be interpreted as a signal of future performance that proportionally opens outside opportunities for West Point officers.

Similarly, the tastes of each officer may be involved. Perhaps former cadets who did better in *Academic GPA* did so because they liked the academic environment, as opposed to students who did not like the academic environment and didn't perform well. These same students may have a preference for classroom-type study and may be turned off by the hands-on experience of the Army. Therefore, the latter may choose to depart the Army at a higher rate than their average peer. Finally, since there is no predicted effect of *Academic GPA* during the second or third retention decision windows, perhaps the *Academic GPA* signals and tastes both lose saliency the further one gets from graduation.

Academic GPA was the only explanatory variable that showed evidence of non-linear effects. The decreasing marginal predictive effects of *Academic GPA* on *Retention beyond a <u>short</u> stay* could signal that West Pointers with the highest GPAs are not significantly more likely to leave the Army than West Pointers with moderate high GPAs. In other words, the brightest, in terms of academic achievement, are not a lot more likely to leave than just the bright.

Military Development GPA. The *Military Development GPA* is the strongest predictor of West Point retention at during both the short and medium stay decisions. This could be a due to either tastes or positive signaling, or a combination thereof. Cadets who did well at their eleven force-distributed job evaluations may be signaling that they have learned how to succeed in the military culture and context. Therefore, their decision to remain in the military may be due to a higher military self-efficacy. This decision may be due to their inherent competency with the military system or simply

because they like the military culture. Regardless of the actual reason, these individuals perform well within the parameters of the Army.

Similarly, cadets with higher *Military Development GPAs* could be receiving more positive signals along the way. Prior research showed that the cumulative job-ratings (operationalized by West Pointer's *Military Development GPA*) predicted selection for early promotion to major around year seven to nine (Spain, pending). Since promotion decisions are based on an officer's cumulative performance record, officers with a higher *Military Development GPA* are likely getting stronger performance reviews early in their officer career than their peers. Since they are receiving signals that they are doing well in the organization relative to others, they may also be more likely to stay.

Since the *Military Development G*PA is a composite score of perceived job performance, there is potentially more subjectivity involved as compared to *SAT Score* or *Academic GPA*. *Military Development GPA* could be measuring leadership performance, as approximately half of cadets' job rating periods occurred when they were in supervisory roles (although, the other half occurred when cadets are not in direct leadership positions). Additionally, the individual may not have been evaluated on their leadership performance (or not on that exclusively) just because they were in a leadership position. Therefore, the *Military Development GPA* could be measuring other factors, such as followership, compliance, conscientiousness, and military socialization/internalization. Indeed, if *Military Development GPA* is measuring one or more of these factors a significant way, that would help us better unpack the turnover dynamics involved with West Point officers. For example, it would be enlightening to discover the turnover dynamics of officers who were great followers, versus the turnover dynamics of officers who were great leaders.

Army Branch and Functional Human Capital. The *Army Branch* analysis extends the human capital research by segmenting human capital by functions and contributing to the establishment of "functional human capital." Cadets commissioned in *Combat Support* branches displayed a stronger likelihood of leaving the Army than cadets in *Combat Arms* branches. Cadets in *Combat Support*

branches theoretically receive specialty training in that skill, and get additional practice managing others performing those skills. For example, a *Signal* officer is likely to have information-technology skills that are readily transferable to occupations beyond the military. Though much of the leadership skills learned in any Army branch could be considered GHC that readily transfers to most all civilian organizations, the technical skills learned in *Medical Service*, *Transportation*, *Ordnance* (usually maintenance), *Quartermaster* (logistics), and *Finance* branches have more generalizability than the *Combat Arms* branches of *Infantry*, *Armor*, *Field Artillery*, and *Air Defense Artillery*. For example, learning how to run a medical center, a shipping organization, a maintenance team, a logistics center, or a finance shop all have clear and numerous skill applications for the civilian world. On the other hand, the technical skills learned leading forty infantrymen, four tanks, two howitzers, or two Patriot Missile launchers may be less directly applicable to civilian roles beyond anything other than the defense industry.

The stronger likelihood of a West Point officer in a *Combat Support* branch to leave the Army could also be explained by self-selection (tastes), and not necessarily development (human capital). During their four years at West Point, and especially during their summer training, cadets are exposed to combat arms branches much more than they are exposed to combat support branches, both formally and informally. In the fall of their senior year, cadets submit their preferences for their *Army Branch*, and almost ninety percent of cadets get one of their top three choices. A cadet could reasonably assume that the Army culture is centered on the same combat arms culture as West Point. Cadets who select a combat support branch could be signaling their dissatisfaction with West Point (a response to not liking their realistic job preview of being a cadet) since they cannot quit the organization. Cadets who came to West Point for instrumental reasons may have come to generate human capital prior to leaving with an elite degree, and may see entering a technical branch as a route to increasing their market values by generating more human capital.

Another potential explanation for the discrepancy in turnover rates is that the *Combat Arms* or the *Combat Support* branches were considered to be more prestigious and attracted different populations of cadets. If this prestige existed, then the competition would be played out in the West Pointers' branch

selection orders, which is based a formula of each cadet's *Academic GPA*, *Military Development GPA*, and *Physical GPA*. With the large numbers of controls in the analysis, including demographics and the above varied cadet performance measures, the possibility of prestige driving the differing turnover results is minimal.

In summary, both functional human capital portability and tastes are reasonable explanations for *Combat Support* officers leaving the Army at a higher rate than *Combat Arms* officers.

Female Officers. While the literature predicted that females would be more likely to leave the Army, analysis of West Pointers did not find that to be the case for the decision to retain beyond a short stay. The posited causes for this predict effect include women being less powerful due to their underrepresentation (Kanter, 1977) and not being as socially connected inside of the organization (Groysberg, 2010). There is no reason to believe these do not also apply in the military. Alternatively, military-specific factors could drive turnover behavior in the other direction. For example, many West Point females may marry other military officers, and the tangible (economic) and emotional benefits of being dual-military may be perceived as significant, though it could also be argued that the effects of being dual-military can add more stress to such couples.

Also, perhaps the climate for women in the Army (as reflected by their retention numbers) is changing over time. In other words, could the Army have gotten better than their civilian peers at integrating women into its ranks as equals? To test this, two modified versions of Equation 1 were run. The first modified regression was conditioned on being in the older years groups (1992-1998), and the second regression was conditioned on being in the younger year groups (1999-2007). The results of this found that being a female in the older year groups positively predicted retention (β=1.22, $p \leq 0.05$) beyond a short stay, and being a female in the younger year groups is insignificant (β=0.89, $p \leq 0.18$). These results may provide weak evidence that that the climate for junior women officers in the Army may be getting worse, if the retention level of women is a signal of female officers' perception of Army's inclusiveness.

Also, female officers were shown to be less likely than male officers to retain beyond a medium stay. At the second decision point, West Pointers are typically between 28 and 33 years old, where many of them are married and have children. The decreased likelihood of retention for female West Pointers in the second retention window could be explained by society traditionally expecting females to have higher levels of personal involvement with homemaking and child-raising tasks than their male counterparts.

Underrepresented minorities. Underrepresented minority West Pointers were more actually more likely than Caucasians to retain beyond short, medium, and long stays in the Army. Perhaps the negative retention effects of being a minority predicted by the literature is countered by psychological effects of the increase in minority density from the 18.5 percent of West Pointers in this study to more than 38 percent of the total Army population in 2011 (U.S.Army, 2011). Additionally, the percentage of minority enlisted soldiers was even higher, at 40 percent (U.S.Army, 2011). Therefore, minority officers may not feel negative effects of being a minority because minority representation is beyond Kanter's (1977) "token" levels. It is possible that minority officers may also feel like they are the unofficial representatives of the large number of minority enlisted soldiers and feel obligated to stay and serve as role models and/or representatives for those of similar demographics who are serving under them..

United States Military Academy Preparatory School (USMAPS). There were two control variables that unexpectedly display significant predictive power on retention. First, attending the one-year *Prep School* does not have an effect on the decision to retain beyond a short stay, but shows significant positive effects on West Pointers choosing to retain beyond a medium stay (β=1.34, $p \leq 0.01$) and long stay (β=2.41, $p \leq 0.01$), which is particularly notable when considering the regressions were controlled for the primary factors that drive much of the admittance to the *Prep School (SAT Scores* and *Recruited Athletes*). In other words, there may be something different about Prep School West Pointers than just the primary reasons they selected to attend West Point.

Prep School cadets are, on average, at least one year older than the average direct-admit cadet. Since a majority of West Point's former enlisted soldiers are also *Prep School* graduates, many of them are two, three, and four years older than their peers[77]. This may indicate a selection effect that signals *Prep Schoolers*' stronger tastes for military service, since cadets who attend the *Prep School* are signing up for an additional year of the Army relative to cadets who are direct admits to West Point.

Perhaps utility helps explain the different turnover dynamics for Prep School West Pointers. Army officers generally receive set salary increases every two years on active-duty, and since thirty percent of USMAPS graduate West Pointers were formerly enlisted, they would, on average, be closer to receiving the high utility of the military retirement age at 20 years of active-duty service than classmates who did not attend USMAPS. Thus, they would be more likely to stay at the second and third retention decision points than a West Pointer who did not have time as an enlisted soldier, and was further from retirement eligibility. The reason why this effect was not seen in the first retention decision may be explained by the lack of temporal proximity to the reward (retirement). The feeling of being close to retirement may not have yet have become salient for *Prep School* graduates by six years after graduation, when even prior-enlisted West Point officers were still over ten years away from potential military retirement.

Recruited Athletes. There is evidence that being a *Recruited Athlete* out of high school negatively predicts retention beyond a <u>short</u> stay (β=0.66, $p \leq 0.01$) and beyond a <u>medium</u> stay (β=0.73, $p \leq 0.01$). In other words, on average, a recruited athlete has a 36 percent less chance to retain past a <u>short</u> stay than a cadet who was not a recruited athlete, even after taking cognitive ability and academic performance into account. This trend is supported by a recent examination of recruited athletes at West Point (Betros, 2012). Almost no West Point athletes enter professional athletics, so being pulled into lucrative professional sports is not a reasonable explanation. Perhaps the answer lies in the identity of

[77] The dataset used does not identify which of the USMA cadets/USMAPS cadet candidates were former enlisted soldiers, though, historically, approximately 30% of USMAPS cadet candidates throughout the period of this study were former enlisted soldiers (Ruth, 2014). Due to maximum age requirements upon entering West Point (must be less than 22 years old), a former enlisted soldier would have no more than four years of enlisted experience, and most would have less.

West Point officers, going back to why they came to West Point in the first place. If West Pointers were recruited to play intercollegiate athletics, they likely came to West Point to play be a Division I athlete, in lieu of, or in addition to, wanting to become an Army officer. Following the motives logic (Wrzesniewski et al., (forthcoming)), the existence of instrumental (transactional) motives replaces or negatively moderates the retention effects of internal, service-based motives, and they are therefore less likely to retain in the Army.

Changes across a Career. As expected, this paper's three primary retention models (Equation 1, 2, & 3) sequentially lose explanatory power over the course of West Pointers' officer careers, as demonstrated by their declining pseudo-R^2 values. For example, in the fully specified model of Equation 1 (see Table 9a, Model 1), studying retention beyond a short stay, there are four explanatory variables that predict retention at the $p \leq 0.10$ level. For Equation 2, studying retention beyond a medium stay (see Table 9a, Model 2), there are only two. For Equation 3, studying retention beyond a long stay (see Table 9a, Model 3), there are none. This could be explained if the various talent, performance, and demographic factors are actually most salient during the first retention decision window. The Army's five-year active-duty service obligation may contribute to this differential. Since poor person-job fit (Edwards, 1991) for West Pointers cannot be reconciled until up to five-years after graduation, poor matches have five years to be amplified and aggravated by their inability to leave the situation. Indeed, each year's exodus of West Pointers after their fifth year of officer service is an annually repeated correction to a previously artificially-controlled internal labor market. Those who stay in beyond this point are likely to be better matched, at least from the perspective of tastes, to the requirements and culture of the job. Accordingly, their talents, cadet performances, and demographics become less influential on their second and third turnover decisions. Both measures of intellectual ability and the ethnicity dummy variables reflect this, as they only have predictive power regarding to the short stay decision. Similarly, the most robust predictor of retention, *Military Development GPA*, loses its predictive power for the decisions to retain beyond a medium stay. Therefore, in investigating the issue of whether the "best and brightest" West Pointers are

separating from the Army, perhaps the variance most explainable is the decision whether to retain beyond the short stay.

The only explanatory variable that does not show influence during West Pointers' first retention decision, but has significant predictive influence later in their careers, is being a female, which was shown to be a highly negative predictor of retaining beyond a medium stay. As addressed earlier, this may be explained by West Pointers' in the second retention window being in the child-bearing years of the late 20's, with society's unequal expectations of gender roles for women and men in both marriage and child rearing responsibilities. Additionally, the Army may be a culturally or structurally challenging place for a woman to be married or have children. In short, many West Pointers are getting married and having children (or hoping to) during the same time window they are deciding whether or not to retain beyond a medium stay. Accordingly, if the Army and/or society have differing expectations for females in marriage and/or child-raising, that might may explain female West Pointers' increased likelihood of turnover during this time period.

Integrative Discussion: So Are the Best and Brightest Getting Out?

West Point uses their own single, conflated measure of "best and brightest." West Point cadets receive an overall class ranking, which is 55 percent *Academic GPA*, 30 percent *Military GPA*, and 15 percent *Physical GPA*. Using Equation 1, but replacing *Academic GPA*, *Military GPA*, and *Physical GPA* with an single continuous variable made up of the above proportions called *Overall GPA*, I find that *Overall GPA* has no statistically significant predictive power on retaining beyond a short stay (β=1.04, $p \leq 0.42$), a significant predictive effect on the decision to retain beyond a medium stay (β=1.58, $p \leq 0.001$), and no statistically significant power on predicting retaining beyond a long stay (β=1.47, $p \leq 0.13$).

Considering the cumulative findings in this paper, if someone was to say “the best ***and*** brightest West Pointers were getting out of the Army at a higher rate than their peers,” (assuming they were referring to the Classes of 1992-2007 and defined “best ***and*** brightest” by cognitive/academic ability and high cadet job performance (the strongest predictor of being a high-performing officer)), there is evidence

to suggest that, on average, their comment is not correct.[78] In fact, the opposite appears true, as there is evidence that "best and brightest" West Pointers are more likely to stay in. If the person who said "best and brightest" is referring to some other combination of innate abilities, motives, and/or performance levels, their conclusion would require additional testing based on their personal operationalization of the "best and brightest" variables.

Perhaps the somewhat popular anecdotal argument that the "best and brightest" are getting out of the Army at a higher rate than their peers results from a combination of the effects from observable and non-observable data. First, *Academic GPA* is the only cadet performance area in which the highest performers are recognized by West Point visibly and consistently throughout the time period of this study. The top five percent of cadets in each class in *Academic GPA* wear distinctive gold-colored stars on their collars or on the front pocket of their shirts, so their status as high academic performers is well known across their peers. A robustness check shows that wearing gold stars at graduation is not predictive of an officer's decision to retain past a short stay.[79] This infers that the absolute highest (top five percent) *Academic GPA* performers do not have the same propensity to depart after only having a short stay in the Army as the other strong academic performers.

Other than the gold-stars' identification of top *Academic GPA* performers, there is no realistic way cadets can know large numbers of their peers' performance levels on *SAT Scores, Military Development GPAs, or Physical GPAs,* which could only be estimated based on many personal observations. Knowing that a West Point officer could use the only performance signal West Point gives them in evaluating large numbers of their peers, it follows that if a cadet equates *Academic GPA* with best and brightest, and has personally seen many of the cadets they knew who wore stars get out of the Army, then they may reasonably conclude that the "brightest" do not stay in the Army (despite an anecdotal sample size too small and not random enough to make any statistically significant conclusions).

[78] A similar test was conducted for West Pointers that were in the top 1/3 of their class in Academic GPA, Military Development GPA, and Physical GPA.

[79] Using Equation 1, but replacing *Academic GPA* with the *Starman* dummy variable (top 5% of Academic GPAs), I find that being a *Starman* had no predicted effect on retention past year six, either with *SAT Score* as a control (β=1.03, p=0.74) or without *SAT Score* as a control (β=1.04, p=0.68).

Are West Pointers Who Leave the Army Really "Getting Out?"

Many papers in the turnover literature have studied the relationship between ability and turnover. Collectively, they found a curvilinear relationship between ability and turnover, showing that worst get fired or leave, and the people in middle stay, and the best leave (Jackofsky, Ferris, & Breckenridge, 1986; Charlie O Trevor, Gerhart, & Boudreau, 1997). Also, several papers added nuance to this effect. For example, Groysberg (2010) found that when stars leave, they are less likely to move to competitors and more likely to become entrepreneurs than average performers.

Destinations for a departing West Pointer vary. An organization whose purpose is to serve its nation should consider what it really means to "get out." This paper treats getting out of the Army as a regression "failure" to remain on active-duty service beyond three particular windows of time, indicating short, medium, long, or career stay. Yes, the West Pointer leaves the Army, but what they are doing after they leave? If West Pointers have internalized identifies of leaders of character and servants of their nation, and this identify continues to drive behavior, the civilian career fields West Pointers go to stand to potentially benefit significantly. Civilian leaders of character with large amounts of human capital as leaders stand to make the U.S.'s civil service, corporations, political institutions, non-profits, educational institutions, communities, and families all better than the counterfactual (i.e. if no West Pointers were matriculating into the civilian sector). This paper measures people that got out, but not what they got into next.

In conclusion, the basket of general human capital and talent is vast, for both West Pointers and all employees. Traits and performance records such as cognitive ability, job performance, and academic performance are all factors that organizations can measure before making selection and promotion decisions. Though any organization would value having employees who are in the top of every talent and human capital category, it is simply unrealistic. On the other hand, a strategic organization that measures what human capital markers predict performance and retention, then uses those predictors as a basis for strategic selections, promotions, and retention programs may be able to retain its true "best and brightest,"

gaining a sustainable competitive advantage. If the Army defines the phrase "best and brightest" to mean the same thing as the "best," then they are fortunate to be retaining their definition of their "best and brightest" officers right now. Likewise, the Army should consider continuing their current officer personnel policies and reinforcing those policies' success. If the Army considers the "brightest" to be a valued and distinct concept from the "best," then there are other implications that should be considered.

When considering this paper's findings in combination with the findings from the first paper in this series, several overall implications emerge. First, managerial track employees with high cognitive ability may be more likely to retain in their organizations longer, but less likely to be promoted early or selected for senior leadership roles than their average peers. Second, early job/internship performance predicts both performance and retention. Third, female superstars are less likely to be promoted early or selected for senior leadership positions and turnover at a higher rate than their male superstar colleagues. Finally, if organizations select their HI-POs based on factors that they wants in their junior leaders, these same organizations may unintentionally be screening out employees who are not as strong in the factors valued for junior employees, but who may have the strongest factors desired for senior leadership.

Implications

If the Army defines the phrase "best and brightest" to mean both *Military Development GPA* and *Academic GPA*, then the "best and brightest" West Pointers are actually less likely than the "best and not brightest" West Pointers to retain beyond a short stay. To better diagnose why this is happening, the Army could establish an enterprise-wide, rigorously designed exit interview and survey (EIS) program for all junior officers. This EIS program could unpack many issues brought to light in this paper, including trying to better understand why many of West Point's top academic performers are predicted to leave at higher than average academic performers.

Perhaps it is not realistically possible, or too expensive, to improve the retention of the "best and academically brightest" West Pointers. If this were true, it may be advantageous for the Army to invest in the "best and not academically brightest," since they are highest in the two traits with most robustly

predict both promotion/selection and retention. In other words, if the Army knew that West Pointers with high *Military Development GPAs* were the ones who had a taste for Army and were more likely to stay, perhaps it could make a deliberate decision to promote and develop these officers, regardless of their relative academic performances.

Another area of low-hanging fruit for potential policy improvement has to do with West Pointers who were recruited athletes, a group that showed above-average aptitude for early promotion in the first paper of this series (Spain, pending), but showed much lower than average retention. If the Army could understand why these individuals are leaving, they would have a much better chance to increase the retention of a high-performing officer group. The recent study about motives (Wrzesniewski et al., (forthcoming)) sets the foundation for understanding this dynamic, and further study could unpack the mechanisms at work and if organizational interventions could change the retention of this talented group.

Additionally, the results indicate that the Army could possibly benefit by examining uniquely vesting retirement options. The analysis identified that officers who stay past ten years almost all stay until twenty, emphasizing the gravitation pull of the pending retirement. Perhaps earlier-vesting versions of this retirement could be offered to high-potential officers who might otherwise separate, such as West Pointers with who have simultaneously high *Military Development GPAs* and *Academic GP*As, motivating them to remain in the service.

With the knowledge of what is actually happening with turnover of the high-potentials in their organizations, managers will be in stronger position to better recruit, develop, and retain their high potentials, enabling future performance and strategic competitive advantage.

Limitations

There is no definition of "best and brightest" that can fully characterize an employee. To the contrary, all employees possess a unique distribution of talent; therefore the "best" is only as useful as it refers to any specific talent or group thereof. For example, employee A may be more logical and a better problem solver, but employee B is a better communicator, therefore making them both the "best" at

useful, but different, things. This paper defined talent as the ability to achieve early promotions when compared to one's peers. Assuming the organization is promoting the people who are the most likely to be the best future leaders for the organization out of the candidates available for promotion, this paper's use of term talent is the ability to rise into the top tier of the senior leaders in an organization. If the organization is not reliable in its promotions, or if it is selecting the wrong people for promotion, much of this paper's analysis must be considered in a different light, since the criteria used for best and brightest are taken from factors shown to predict West Pointer promotions.

The U.S. Army culture is strong, and it is anchored in an internal labor market with almost no lateral entry points. Therefore, one must be cautious when trying to generalize this paper's finding to the non-profit, government, or business sectors that are not operating in strict internal labor markets.

Additionally, though there were a robust set of explanatory and control variables used in this analysis, each employee's numerous turnover decisions throughout their careers are idiosyncratic and infinitely complex. This should both motivate us, and caution us, when trying to explain turnover of an individual or a group.

Additionally, my analysis has the potential of having confounding/lurking variables driving the results. For example, scholars have shown that *SAT Score* and *Academic GPA* tend to be correlated with socioeconomic status (Sackett, Kuncel, Arneson, Cooper, & Waters, 2009). Since I did not have access to data on the socioeconomic status (e.g. wealth) of each cadet prior to coming to West Point, I was unable to control for it. In turn, it is possible that socioeconomic status is driving some of the results that I attribute to *SAT Score* and *Academic GPA*. There are potentially other endogenous variables as well.

A limitation of having three subsequent time periods of analysis (short, medium, and long stays) is that the results are not perfectly comparable with each other, because they are analyzing different starting populations. Unless the West Pointers who separate from the Army are perfectly random, which the findings from this paper call into doubt, the populations being evaluated in this study are not only of different size, but they also have differing characteristics. Similarly, the idiosyncrasies of the various populations in this study should always be considered before applying the findings to other organizations.

In general, the first sample (the analysis of *Retaining beyond a short stay*) is likely more representative of the USMA population than the latter two samples, due to its starting period (Year 4) being much closer to the of USMA graduation than the starting period of the other samples (Year 6 and Year 10).

As mentioned in the introduction, this paper focuses on correlation (identifying "what" factors predict West Pointers retain), and not causation ("why" they retain), though, at times, it touched on "why." Any of the potential explanations of "why" offered must be fully studied before any causal chains are established. One example of the challenges this presents is in considering why the "best and brightest" may stay longer in the Army. Do the best and brightest stay longer because they have more of a taste for military service, or do they stay longer because they are receiving signals (rewards) because the organizations recognizes them as the best and brightest? This is impossible to disentangle the "why" from the "what" analysis that was conducted.

Since the data was generally in cross-section format, all models have not addressed the potential problem of personal-level heterogeneity influencing the results. If the data were panel, we could account for this problem by using fixed effects. Due to the nature of the data we cannot account for this risk.

Finally, West Pointers experience many things between the time they graduate and the time they make their first Army officer turnover decision (typically around five years). These things, such as quality of leadership received, friendships made, adventures had, sense of belonging, sense of a future, etc. all influence their idiosyncratic decisions of "do I stay or do I go?" This study does not incorporate any of those real inputs of their officer experiences, and that is why the pseudo-R^2 values for the main regressions are relatively low. To fully understand turnover, one would need to gather detailed data on the experiences of the employees all the way up to their turnover decision points.

Contributions

This paper address the question of "Are the Best and Brightest West Point Officers Getting Out of the US Army?" with rigorous analysis of the turnover dynamics. The U.S. Army may use the results to

improve its understanding its current cadet and officer talent identification and management systems, in order to reinforce areas of success and to improve applicable personnel procedures and policies.

Secondly, this paper contributes in several significant ways to the performance literature across the social sciences. First, this paper's longitudinal scope of seeking to understand turnover dynamics across such a broad time frame in a professional's career is rare. Most comparable studies use cross-sectional data that predict current or much shorter-term outcomes, such as the next quarter, or the next year. Indeed, retention studies are considered long-range range if they predict over just a few years. This study examines a population over 16 years.

Third, this paper also examines three different retention decision points across three stages of professional employees' careers, while most turnover literature studies one turnover event at a single career period. Professionals are expected to lead and serve in different ways at different career points, and this study is a robust check of the retention influences of ability, traits, and experiences across various levels and types of responsibilities. This analysis shows that some of the predictors of retention remain relatively stable over extended periods of time, while others vary in applicability and predictive direction or strength.

Fourth, this paper contributes an unusually large number of explanatory and control variables to the analysis. This array of factors was shown to proxy human capital's ability to predict the retention of people in the future. The large array of explanatory and control variables gives the field a more robust look at each of the studied predictors of the retention of employees over time.

Fifth, this paper contributes a setting effect to the literature. Much Talent Management research is moving towards studying HI-POs, or stars, as they have been shown to be disproportionally influential on an organization's effectiveness (Groysberg, 2010). The population this paper's analysis could potentially all be considered elite, as they have all been screened at least three times to be included in this study: they decided to apply to West Point, they were accepted (West Point had an approximate 10 percent acceptance rate during this period), and they graduated (West Point had an approximate 78 percent graduation rate during this period). Though all of them should not be considered HI-POs, as HI-

Os are typically understood as a within-population (relative) term, studying HI-PO's *within* elite communities has been little explored. Indeed, this study may have strong external validity for predicting retention of HI-POs in other elite settings beyond the military, including high profile public administrations, Fortune 100 businesses, and exclusive non-profit domains.

Sixth, this paper contributes to the race and gender literature by documenting the varying turnover dynamics experienced by females and underrepresented minorities.

Seventh, this paper helps develop an embryonic area of study, the effects of unaccompanied deployments (remote assignments) on retention, and unpacks its main effects while looking through the lenses of the workers' immediate family situations.

Eighth, this paper establishes the concept of *functional* human capital, in which portability is related to the type of function someone is trained to perform in their job. Functional human capital is a sub-set of industry human capital, where the type of skill determines the level of portability to external organizations.

Finally, this paper finds numerous areas where the turnover dynamics of West Point officers are very different than predicted by the existing literature. For example, the analysis demonstrated that West Point HI-POs did not have a greater desire to work under a force-distributed rating system than their peers, which is in contrast to existing literature. Also, the analysis finds that a strong economy predicted West Pointer retention among post 9/11 West Pointers, not turnover. These and other findings provide scholars the opportunity to create new theories, or find moderators and mediators that sharpen existing ones.

Future Research

This research should be expanded to study the complete officer sample from this time period, including the 70 percent who are commissioned through ROTC and OCS programs. If the greater research question is "Are the Best and Brightest Junior Officers Getting Out of the U.S. Army?" the data from the other major commissioning sources must also be examined rigorously.

Perhaps the most important follow-up question to this specific research is to answer: what is the process of a West Pointer's decision of whether to retain beyond a short stay or medium stay? This could be achieved by conducting detailed qualitative interviews with randomly selected West Pointers in or near those decisions windows, to discover what they are actually thinking about and how they are weighting their evaluation criteria.

Furthermore, the dataset utilized for this study is rich and can be further analyzed to answer other important questions. For example, a researcher could more rigorously investigate the differences in the retention dynamics of men and women, average performers and HI-POs, and ethnic minorities and Caucasians, all to gain better understandings of how turnover dynamics are experienced differently depending on group characteristics. Similarly, it is possible to study different generations in more depth (pre-9/11 and post 9/11 West Pointers), versus simply scratching the surface in one of the alternative explanation sections.

Also, several hypotheses and areas of alternative explanations turned out to predict different outcomes than predicted by the literature, and as a result, several important questions remain unanswered. This paper investigated "what" factors predict retention. It is now time to investigate the “whys.” For example, why do West Pointers with higher cadet job performance ratings stay on active-duty longer than their peers, when some of the literature predicts they will leave the military? Why do West Point officers, including those predicted to be the top officer performers, seem to dislike working under force-distributed rating systems? Why is a West Pointer of the post-9/11 generation more likely to stay in the Army if the economy is strong, when the fundamental economic theories would predict otherwise?

Due to this study’s high number surprising outcomes that contradict existing turnover literature, a bigger question emerges. Namely, “What is different about West Pointers when compared to their average civilian peers, in regards to their leadership, their service, and their character? And, of those differences, which are due to selection, and which are due to development?”

Additionally, it would be compelling to research where West Pointers who “get out” are going. There is an opportunity to decompose the dependent variables (DVs) used in this paper, retaining beyond

a short stay, retaining beyond a medium stay, and retaining beyond a long stay, into approximately five different destinations each. Examples of these destinations would be graduate school, civil service, politics, industry (by type), non-profits, entrepreneurship, etc. Analysis could then show which human capital, demographic, and taste factors as cadets (young professionals) predict different types of professional pursuits outside of the military.

Alternatively, this data could be collected by the Army-wide officer exit interview and survey system recommended in the *Implications* section of this paper, or through a comprehensive West Point Alumni survey, that would rigorously account for West Pointers' career choices and their impacts on society after they left active-duty service. If a West Pointer' long-term identity is to actively lead, actively serve others, and to have strong character, a future study could compare peer West Point and non-West Point populations to see if West Pointers who are no longer in the Army lead differently, serve differently, and apply character differently than their non-West Point peers. Following this line of research, the final steps would be to analyze whether the findings are a result of selection effect (leaders of character apply to West Point in the first place) or development (West Point builds leaders of character).

Though this paper helped bring to light how different demographics experience different turnover dynamics, further study of the complex performance and turnover dynamics of high-potential men compared to high-potential women, and high-potential non-minorities compared to high-potential under-represented minorities. This is a fruitful field that is awaiting curious and rigorous researchers.

Appendixes for Chapter 2: Robustness Checks and Alternate Explanations

When modeling turnover dynamics, there is potential for numerous endogenous factors to be at work, rendering the predicted effects of the modeled independent variables less accurate or inaccurate. Additionally, interactions between independent variables may exist that better explain what is actually influencing turnover. Accordingly, I conducted a series of overall robustness checks, and then statistically examined alternative explanations for West Pointer' turnover dynamics.

Appendix I. Retention without conditioning

Appendix II. Best & Brightest 2 x 2 analysis

Appendix III. Deployments

Appendix IV. Force-distributed rating systems

Appendix V. Family demographics

Appendix VI. Macro-economic effects

Appendix I: Retention without conditioning

First, I ran Equations 1, 2, 3 without controlling for deployments and without conditioning on still being in the Army, each at year four, six, and ten, respectively (see Table 18). This provides a continuous examination of the West Pointers predicted to remain in the Army past years six, ten, and sixteen. Examining model 1, 2, and 3 below, they coefficients from the explanatory variables generally match the direction, magnitude, and significance of the conditioned models studied earlier. Examples include the two strongest predictors of an officer making it to each of the three retention points are the *Military Development GPA* and being an *African American*. The two strongest predictor of an officer not remaining in the Army at each of the three retention points is being a *Recruited Athlete*.

This robustness check presents no evidence that weakens the confidence in this paper's original analyses.

Table 18: Retention without conditioning on deployments and retaining to year 4/6/10, respectively

	(1)	(2)	(3)
Retention Logit (Odds Ratios)	What predicts who will stay past six years (stay to be a Co Cdr)?	What predicts who will stay past ten years (stay to be a MAJ)?	What predicts who will stay past sixteen years (stay to be a LTC)?
1-yr Prep School	1.09	1.25***	1.43***
	(0.06)	(0.08)	(0.13)
Recruited Athlete	0.66***	0.65***	0.66***
	(0.03)	(0.04)	(0.06)
Physical GPA	0.99	0.93	0.93
	(0.05)	(0.06)	(0.08)
Female	1.00	0.90	1.00
	(0.06)	(0.07)	(0.12)
African-American	1.33***	1.44***	1.54***
	(0.11)	(0.13)	(0.21)
Hispanic-American	1.06	1.10	1.04
	(0.10)	(0.13)	(0.17)
Asian-American	1.21**	1.13	1.03
	(0.10)	(0.11)	(0.15)
Native-American	1.25	1.44	1.83
	(0.29)	(0.38)	(0.69)
Other Ethnicity	0.97	0.89	0.44
	(0.17)	(0.20)	(0.34)
Military Development GPA	1.69***	1.99***	2.00***
	(0.11)	(0.16)	(0.22)
Academic GPA	0.71***	0.87**	1.01
	(0.04)	(0.06)	(0.10)
SAT total	1.06***	1.04	1.03
	(0.02)	(0.03)	(0.04)
Correctly Classified	63.36%	66.96%	72.00%
Pseudo R^2	0.1164	0.0458	0.0478
# Obs	14,671	11,042	5,633

* $p \leq 0.10$, ** $p \leq 0.05$, and *** $p \leq 0.01$

The β-values are all in logistic/odds-ratio format, which is based around 1.0. A number below one is negatively predictive, and a number above one is positively predictive. Robust standard errors are listed below each β value in (parentheses). Correctly classified is a goodness of fit test for the entire model from STATA 12.1 [estat classification, cutoff (.06)], showing the percentage of time that model would accurately predict the correct outcome. All models are also controlled for *Year-Group*, *Army-Branch*, and *Home-Region*. *Deployed Years* is intentionally omitted, as it varies over time.

Appendix II: Best and Brightest 2 x 2 analysis (versus earlier 3 x 3 survival analysis)

To perform a final robustness check on this overall conclusion, I performed a similar, yet simpler, check to compliment the Event Hazard Analysis used to check Hypothesis 4, and segmented the cadets into four groups. This was done by organizing the cadets into the top fifty percent and bottom fifty percent of their respective West Point classes, according to a single measure of "best" and two measures of "brightest," as summarized in Table 19.

Table 19: Cadet groups, 2 x 2

	Bottom 1/2 Academic GPA or SAT ("not brightest")	Top 1/2 Academic GPA or SAT ("brightest")
Top 1/2 Military Dev. GPA ("best")	***Type 2*** *Best & Not Brightest*	***Type 1*** *Best & Brightest*
Bottom 1/2 Dev. GPA ("not best")	***Type 4*** *Not Best & Not Brightest*	***Type 3*** *Brightest & Not Best*

Each cadet fell into one of the four types. Total percentages of cadets in each type are as follows: Type 1= 0.331; Type 2= 0.165, Type 3=0.166, & Type 4=0.333.

After defining the four types of cadets, I first checked the overall retention history of the four types. Then graphically checked how each predicts retaining beyond a short stay, retaining beyond a medium stay, and retaining beyond a long stay, relative to each other. After the *Military Development GPA, Academic GPA* was the strongest cadet performance predictor of being promoted early or selected for command, and is a proxy for brightest, so I examined it first (Table 20). Next I examined the same using *SAT Score*, this paper's other proxy for brightest (Table 21).

Table 20: West Pointers' retention across their decision windows ("brightest"= *Academic GPA*)

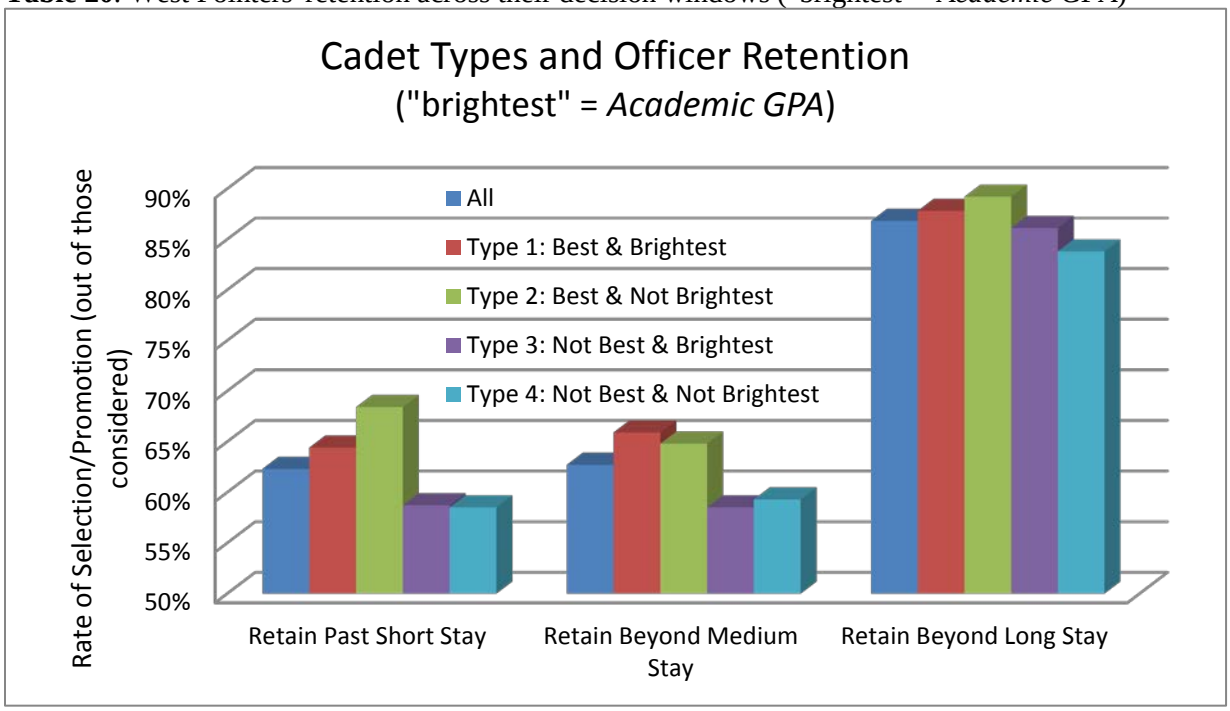
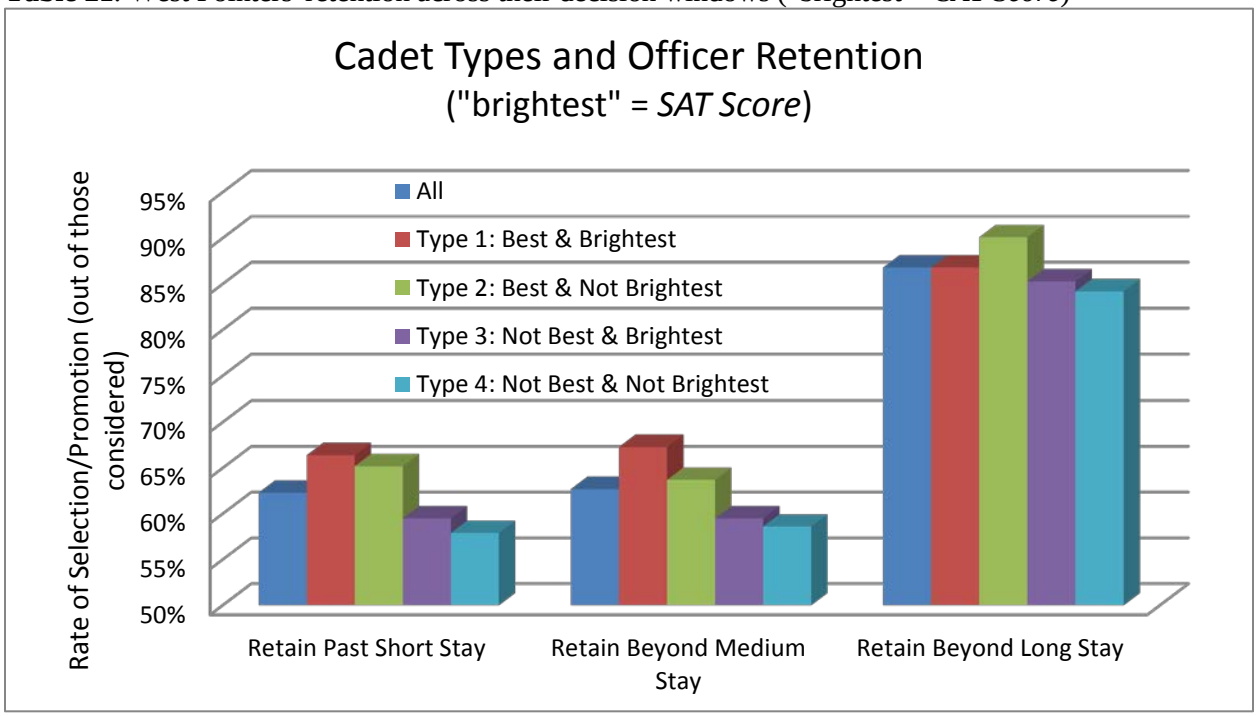


Table 21: West Pointers' retention across their decision windows ("brightest"= *SAT Score*)



By examining and comparing Tables 20 & 21, several correlations stand out. First, as a group, Type 1 and 2 West Pointers retain longer than Type 3 and Type 4 West Pointers across all three retention decision windows, and while using both "brightest" lenses. This is evidence that the "best and brightest" West Pointers are staying more likely to stay in the Army during all retention decision windows, as compared to their peers.

Appendix III: Deployments

Previous research has found that number of days away from home to be either a negative (Sullivan, 1998) or a curvilinear (Huffman, Adler, Dolan, & Castro, 2005; Wisecarver, Cracraft, & Heffner, 2006) predictor of retention in the Armed Forces. Other research found a service-member's perception of "amount of time separated from family" and "amount of time for family and friends" were the two most frequently stated reasons for leaving the service (R. A. Giacalone, 2000). Relative amounts of deployments matter, as well. One study found that those who had deployed more than their peers were less likely to have the intention to make the military a career (Adler, Thomas, & Castro, 2005). A study of U.S. Air Force pilots showed deployments predicted turnover (Fullerton, 2003).

On the other hand, some research has found that deployments actually increase likelihood of retention. Testing combat deployments in particular, one study found that a moderate level of deployment predicted retention, but, after a certain point, the likelihood of retention decreased as the length of the combat deployments increased (Hosek & Totten, 1998). Another study focused on the Kosovo campaign and found that U.S. Soldiers in Kosovo who had deployed at least once before the Kosovo Campaign reported a greater preference for remaining in the military that soldiers on their first deployment (Adler, Castro, & Bartone, 1997). Also, short deployments may promote retention, as researchers found that time away from family predicted retention, but the link was limited to short duration deployments (Sticha, Sadacca, DiFazio, Knerr, & Hogan, 1999).

Studying veterans of the Haiti humanitarian deployment, scholars found no significant link between turnover intentions and number of previous deployments (B. J. Reed & Segal, 2000). Therefore, the debate about how deployments influence retention is not settled.

During the time period the West Pointers studied in this paper were officers, 1992- 2013, the U.S. was involved in numerous overseas operations, typically called “deployments.” Many of these deployments were certified to have enough inherent physical danger to qualify participants to hostile-fire pay, including service in Kuwait, Macedonia, Kosovo, Bosnia, Afghanistan, and Iraq. Though officers' overall frequency of deployments has changed through officer generations, depending on the prevalent

U.S. Foreign Policy and international situation at the time, most West Pointers deploy at least once during their 20-year career. Almost all deployments are mandatory and are unit-based. For example, if an officer is assigned to a unit, and the unit gets deployment orders, that officer deploys as well. It is possible to volunteer for deployments, but that is not the norm. The Army has units that traditionally do not deploy, such as when one is assigned as an instructor or trainer at an Army school, yet there have been instances of trainers deploying as well, typically as soldiers deployed individually to deployed units.

All soldiers, including West Pointers, are paid a monthly stipend when deployed. This stipend, along with the traditional pay soldiers receive when deployed, is considered to be free from income tax. Additionally, all soldiers receive a combat-service stripe for each six-month period of time they serve on deployments (cumulative over their careers), and are authorized to wear the "unit patch" of any unit they deployed with on their uniform. This gives deployments, and length of deployments, some positive utility in the form of additional pay and visual recognition, in addition to service rendered and experience-based skills (human capital) gained.

The data include cumulative deployment data by month for the West Point officers. It shows if an officer was, or was not, deployed to a location officially designated a hostile-fire-pay zone during a particular month. I transformed this monthly data into *Years Deployed*, a cumulative continuous variable, which totals the total number of years a West Pointer has been deployed at the end of each of their active-duty service years. The below table provides summary statistics for *Years Deployed*.

Table 22: Deployments [80]

Type	Variable	Obs	Mean	Std. Dev.	Min	Max
Control	Years Deployed by Year 1	17,476	0.02	0.08	0	0.92
Control	Years Deployed by Year 2	17,186	0.20	0.31	0	1.58
Control	Years Deployed by Year 3	15,490	0.44	0.46	0	2.25
Control	Years Deployed by Year 4	14,318	0.63	0.57	0	2.50
Control	Years Deployed by Year 5	11,216	0.76	0.67	0	3.08
Control	Years Deployed by Year 6	7,733	0.89	0.76	0	3.50
Control	Years Deployed by Year 7	6,203	1.05	0.86	0	3.58
Control	Years Deployed by Year 8	4,931	1.18	0.92	0	4.50
Control	Years Deployed by Year 9	4,076	1.25	0.97	0	4.50
Control	Years Deployed by Year 10	3,526	1.27	0.99	0	4.50
Control	Years Deployed by Year 11	3,058	1.27	0.98	0	4.50
Control	Years Deployed by Year 12	2,684	1.29	0.97	0	4.58
Control	Years Deployed by Year 13	2,339	1.36	0.96	0	5.08
Control	Years Deployed by Year 14	1,988	1.50	1.01	0	5.83
Control	Years Deployed by Year 15	1,677	1.66	1.04	0	6.25
Control	Years Deployed by Year 16	1,373	1.78	1.05	0	6.42
Control	Years Deployed by Year 17	1,097	1.89	1.11	0	6.42
Control	Years Deployed by Year 18	816	1.99	1.15	0	6.50
Control	Years Deployed by Year 19	517	2.11	1.21	0	6.50
Control	Years Deployed by Year 20	237	2.23	1.18	0	6.08

Examining Table 22 reveals initial indications of how deployments may affect retention. As the *Years Deployed* is recorded as panel data that changes over time, for the first retention decision, deployment data at the end of year four was used, which is perhaps enough time for many officers to deploy, but not beyond their normal active-duty service obligation of five-years. This weakens the overall analysis somewhat, as the regression now loses all of the officers who separated from the Army prior to the end of their fourth year of active-duty. For the second and third decision windows, I used the *Years Deployed* at the six and ten year marks, respectively.

I first ensure that adding the deployment variable is a statistically meaningful addition to the other independent variables in Equation 1, 2, and 3, by performing a likelihood ratio-test. For each equation, the deployment variable is a significant addition that added explanatory power to the regression. For

[80] Note that the maximum value of deployed by year 20 is less than that of deployed by year 19. This could be explained by the individual with 6.5 years deployed at year 19 resigning his or her commission on exactly the last day of their 20th year of service, since the deployment data entry for Years Deployed by Year 20 is actually the first day of the 21st year of service.

Equation 1, $\chi^2 = 2{,}134$, $p \leq 0.001$, for Equation 2, $\chi^2=43.25$, $p \leq 0.01$, and for Equation 3, $\chi^2=56.53$, $p \leq 0.01$. Next, examining Table 9a's Model 1, I find that *Years Deployed*$_{Year4}$ has a statistically significant negative predictive effect on retention ($\beta=0.91$, $p \leq 0.05$). In other words, for each year a West Point officer deployed during their first four years on active-duty, they have nine percent lower odds to retain in the Army beyond a short stay.

Examining the officers' second retention decision (illustrated by Table 9a, Model 2), I find that *Years Deployed*$_{Year6}$ has a statistically significant negative predictive effect on retention ($\beta=0.83$, $p\leq0.01$). In other words, for each year an officer deploys during their first six years, they have 17 percent lower odds to retain beyond a medium stay. Finally, examining the officers' decision of whether to retain beyond a long stay (illustrated by Table 9a, Model 3), I find that *Years Deployed*$_{Year10}$ does not predict a statistically significant effect on retention.

This analysis provides evidence that officers may be more likely to leave organizations that ask extraordinary stressful things of them, such as endangering their lives and/or forcing a physical separation from their loves ones for the time of deployment. Interestingly, this effect is apparent at the first retention decision, but gets even stronger at the second, and then is not visibly present for the third. This might be explained if we consider that individuals may want to stay in the Army long enough to become a company commander (typically years six through eight), and, therefore, aren't as susceptible to the negative influence of deployments on turnover during the first turnover decision. After West Pointers have completed their company commands, the negative influence of their deployments on their retention may be artificially magnified. Indeed, holdovers who would have separated earlier in their careers had the company command job not been pending would be more inclined to leave the Army immediately after commanding.

Finally, there is evidence that West Pointers who stay past ten years are no longer influenced by their previous deployments. Perhaps this is because officers who were likely to have been influenced by deployments have already left the Army.

Appendix IV: Force-distributed Rating Systems

Being subjected to force-distributed officer evaluation systems may significantly influence retention as well. Similar to receiving force distributed job evaluations as cadets, most Army officers also received force-distributed ratings. Due to two major changes in officer performance evaluation policy during the period of this study, certain graduating classes fell under force-distributed rating systems for their entire experience in the Army, some received force-distributed ratings some of the time, while others were never rated against their peers. Most West Pointers in this study were under the force-distributed rating system for several years of their officer service, but not every year.

The literature posits that HI-PO employees prefer individual-based pay, faster promotions, high-levels of training, selective-hiring, and value of these items more when they are reserved specifically for HI-POs (Trank et al., 2002). HI-POs also have a greater desire for feedback and prefer individual to group rewards (Lewin & Stephens, 1993). Additionally, skill-based compensation systems improves retention for HI-POs, as opposed to group rewards (Trank et al., 2002). Meritocracy manifests itself in stratification, with one example being different pay for corresponding levels of contribution, as job satisfaction has been shown to be directly related to an individual's relative pay (Card et al., 2010). Since Army officers initially receive equal financial compensation, training, and job opportunities, starting around year 10, the exact levels of these benefits become tied to their cumulative annual performance evaluations, through promotion and selection boards choosing the best for the top rewards. When evaluations are force-distributed, HI-PO's have more of an ability to receive the recognition they desire. Therefore, HI-POs should be more likely to stay in the Army when they are under force-distributed rating systems as opposed to non-force-distributed rating systems.

Gender may moderate this HI-PO-based effect on turnover. When professional evaluations are completed tournament style (force-distributed), women are even harder to retain in organizations (Niederle & Vesterlund, 2005). In fact, the researchers found that even though there was no difference in performance, men preferred situations with tournament outcomes and, when given a choice, selected tournament evaluation systems at over the twice the rate as women. Feedback aversion and risk played a

limited role, but the primary driver was men's overconfidence and desire for competition, while women tend to shy away from the same. With regards to competitive tournaments, men are more aggressive than women and pursue status more intensely (Huberman et al., 2004).

Eric Larkin also noted that men value awards more than women, and suggested it wasn't a drive for status or legitimacy, but rather a desire for competition, that accounted for the average male's increased preference (Larkin, 2012). Since Army senior raters reward their best performers with force-distributed ratings that have real effects on their junior officers' future promotions, evaluations create tournament-like environments. Therefore, the presence of a forced-distribution rating system moderates a West Pointer's retention based on gender. Specifically, male West Pointers should be more likely to stay in the Army the more they are under force-distributed rating systems, and female West Pointers will be less likely to stay.

When the Class of 1992 entered the Army, they were under a force-distributed performance rating system. In October 1997, the Army started masking (hiding) second lieutenant and first lieutenant OERs from promotion boards, in effect, negating the forced-distribution rating system and practically guaranteeing promotion to captain for all officers, regardless of performance. In October, 2004, the Army removed the force-distributed rating system for all lieutenants and captains. These policy decisions resulted in a natural experiment, where West Point officers experienced differing numbers of years under force-distributed rating systems, illustrated in Table 23.

Table 23: Total years under a force-distributed officer evaluation rating system as an Army officer

	Years Since West Point Graduation															
Year Group (West Point Grad-Year)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1992	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1993	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1994	1	2	3	3	4	5	6	7	8	9	9	10	11	12	13	14
1995	1	2	2	2	3	4	5	6	7	7	7	8	9	10	11	12
1996	1	1	1	1	2	3	4	5	5	5	5	6	7	8	9	10
1997	0	0	0	0	1	2	3	3	3	3	3	4	5	6	7	.
1998	0	0	0	0	1	2	2	2	2	2	2	3	4	5	.	.
1999	0	0	0	0	1	1	1	1	1	1	1	2	3	.	.	.
2000	0	0	0	0	0	0	0	0	0	0	0	1	.	.	.	.
2001	0	0	0	0	0	0	0	0	0	0	0	.	.	.	.	.
2002	0	0	0	0	0	0	0	0	0	0	.	.	.	.	.	.
2003	0	0	0	0	0	0	0	0	0	.	.	.	.	.	.	.
2004	0	0	0	0	0	0	0	0	.	.	.	.	.	.	.	.
2005	0	0	0	0	0	0	0	.	.	.	.	.	.	.	.	.
2006	0	0	0	0	0	0	.	.	.	.	.	.	.	.	.	.
2007	0	0	0	0	0	.	.	.	.	.	.	.	.	.	.	.

To analyze forced-distribution rating system's main effects on West Pointers, I first check to see if serving under a force-distributed rating system influenced retaining beyond a short stay. As the *Force-distributed* variable is in panel data form, I tested it at the end of year four, which is perhaps enough time for many officers to deploy, but not beyond their normal active-duty service obligation of five-years. This weakens the overall analysis as the regression now loses all of the officers who separated from the Army prior to the end of their fourth year of active-duty, which is approximately 8.3 percent of West Pointers.

To analyze *Force-Distributed's* effects on retention, I started with the first retention decision window, whether West Pointers retain beyond year six. I start with Equation 1, remove *Graduation Year* dummies[81] and replace it with $Force\text{-}Distributed_{Year4}$. I find that $Force\text{-}Distributed_{Year4}$ has negative predictive effects on retention (β=0.90, $p \leq 0.001$), indicating that West Pointers have 10 percent lower

[81] Graduation year dummies automatically account for the economic situation faced by each class. Doing this helps isolate the effects of the *Force Distribution* variable, but the overall analysis becomes less robust, as the numerous endogenous time-based effects faced by each West Point class (shocks to the Army officer personnel system like special retention incentive programs, world events, etc.) are no longer accounted for. However, it does allow the analysis to focus on the *Force Distribution* without conflation

odds of retaining in the Army beyond the end of year six for every additional year they spend under a *Force-Distributed* rating system as an officer.

This was repeated with Equation 2 and Equation 3 (using $Force\ Distributed_{Year6/Year10}$, respectively), though neither result is statistically significant. $Force\ Distributed_{Year6}$ has negative correlations with retention (β=0.98, $p \leq 0.167$), indicating that West Pointers may have 2 percent lower odds of retaining in the Army beyond the end of year six for every additional year they spend under a *Force-Distributed* rating system as an officer. Also, I find that $Force\ Distributed_{Year10}$ has negative correlations with retention (β=1.04, $p \leq 0.137$), indicating that West Pointers may have 4 percent higher odds of retaining in the Army beyond the end of year ten for every additional year they spend under a force-distributed rating system as an officer.

To analyze the *Force-Distributed* rating system's effects on West Point HI-POs, I first operationalized HI-POs by using the results from the first paper in this series. In that research, I showed a West Pointer's *Military Development GPA* was a statistically significant predictor of being selected as a HI-PO later in one's career (selected for early promotion to major, approximately nine to ten years later). I then operationalized HI-PO status to the 1/3rd of cadets in each class with the highest *Military Development GPAs* and called them *Leaders*. I chose 33 percent as an average between what as is frequently used to designate the top performers at Army Schools (20 percent) and in Army performance evaluations (45 percent).

Initially, I check to see if serving under a *Force-Distributed* rating system influenced retaining beyond a <u>short</u> stay. As the *Force-Distributed* variable is in panel data form, I tested it at the end of year four, which is perhaps enough time for many officers to deploy, but not beyond their normal active-duty service obligation of five-years. As earlier mentioned, this analysis necessarily excludes 8.3 percent of West Pointers. I start with Equation 1, remove *Military Development GPA* and *Graduation Year* dummies[82] and replace it with *Leader* (operationalizing HI-PO). I also add $Force\text{-}Distributed_{Year4}$ and the

[82] Graduation year dummies automatically account for the economic situation faced by each class. Doing this helps isolate the effects of the *Force Distribution* variable, but the overall analysis becomes less robust, as the numerous endogenous time-based

interactive variable *Leader_Force Distributed*$_{Year4}$, *(Leader*Force Distributed*$_{Year4}$*)*. I find that *Force Distributed*$_{Year4}$ has negative predictive effects on retention (β=0.88, $p \leq 0.001$) of West Pointers, indicating that West Pointers have 12 percent lower odds to retain in the Army beyond the end of year six for every additional year they spend under a *Force-Distributed* rating system as an officer. Additionally, the predictive ability of the interactive variable *Leader_Force Distribution*$_{Year4}$ is not significant (β=1.03, $p \leq 0.26$), indicating that being under a force-distributed rating system as a HI-PO had no additional statistically significant predictive effects on retention, which is in contrast to the research literature.

I then check to see if cadets who were predicted to be lowest officer performers, those in the bottom one-third of their class in *Military Development GPA*, which I call *Lo_leaders*, have different retention dynamics to being under *Force-Distributed* rating systems as officers than West Pointers in the top one-third of their class in *Military Development GPA*. The interactive variable *Lo-leader_Forced Distribution*$_{Year4}$ has a β=0.94, $p \leq 0.012$, indicating that being under *Force-Distributed* rating systems predicts that West Pointers in the bottom third of *Military Development GPAs* are more likely to leave the Army the more time they spend under *Force-Distributed* rating systems.[83] To summarize the findings of this section, there is evidence that West Pointers are more likely to leave the Army the more they have served under *Force-Distributed* rating systems, especially if they did not do well while being rated as cadets (*Military Development GPA*).

Next, I check to see if serving under *Force-Distributed* rating systems predicts retention beyond a <u>medium</u> stay. I start with Equation 2, removed *Military Development GPA* and *Graduation year* dummies, and replace them with *Leader (operationalizing* HI-POs*)*, and then add *Force Distributed*$_{Year6}$ and the interactive variable *Leader_Force Distributed*$_{Year6}$, *(Leader*Force Distributed*$_{Year6}$*)*. I find that neither *Force Distributed*$_{Year6}$ (β=0.984, $p \leq 0.38$), nor the interactive variable *Leader_Force Distributed*$_{Year-6}$ (β=0.97, $p \leq 0.31$), are statistically significant predictors of retaining beyond a <u>medium</u>

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effects faced by each West Point class (shocks to the Army officer personnel system like special retention incentive programs, world events, etc.) are no longer accounted for. However, it does allow the analysis to focus on the *Force Distribution* without conflation

[83] To test this, I began with Equation 1, removed *Military Development GPA* and added *Lo-leader* and the interactive variable *Lo-leader_Force Distributed*$_{Year-4}$. I find that the interactive variable *Lo-leader_Force Distributed*$_{Year-4}$ has a β=0.99 and p=0.79.

stay. Then I check to see if West Pointers who are predicted to be the lowest officer performers have different retention dynamics to being under a *Force-Distributed* rating system as an officer than *Leaders*. I find that the interactive variable *Lo-leader_Forced Distributed*$_{Year6}$ has a moderately predictive (though not statistically significant) negative effect on retention (β=0.96, $p \leq 0.066$), indicating that being under force-distributed rating systems predicts that West Pointers in the bottom third of *Military Development GPA* may be more likely to leave during their second retention decision window the more time they spent under force-distributed rating systems as officers.

To test its effects on retention beyond a <u>long</u> stay, I start with Equation 3, remove *Military Development GPA* and *Graduation year* dummies, and replace them with *Leader (operationalizing* HI-PO*)*, and then add *Force Distributed*$_{Year-10}$ and the interactive variable *Leader_Force Distributed*$_{Year10}$. I find that *Force Distributed*$_{Year-10}$ has a moderate predictive effect on retention (β=1.07, $p \leq 0.063$), but the predictive ability of *Leader_Force Distributed*$_{Year10}$ is not significant (β=0.93, $p \leq 0.22$). I then check to see if those cadets who were predicted to be lowest officer performers have a different retention dynamic when under a *Force-Distributed* rating system as officer than *Leaders*. I find the interactive variable *Lo-leader_Forced-Distributed*$_{Year10}$ has no predictive effect on retention (β=0.98, $p \leq 0.53$) during the decision of whether to retain beyond a <u>long</u> stay.

Finally, I tested the existing literature's prediction that female officers would be less likely to stay in an organization with a *Force-Distributed* rating system with female HI-POs. To do this, I create an additional interactive dummy variable *Female_Leader_Force Distributed*$_{Year4/6/10}$ (*Female*Leader*Force Distributed*$_{Year4/6/10}$) and add it to each of the retention decision equations above. The results indicate that none of the *Female_Leader_Force Distributed*$_{Year-4/6/10}$ effects are significant influencers of retention at any of the three retention periods (β=0.92, $p \leq 0.16$, for retain beyond a <u>short</u> stay; β=0.99, $p \leq 0.94$, for retain beyond a <u>medium</u> stay; and β=0.93, $p \leq 0.21$, for retain beyond a <u>long</u> stay).

The overall analysis of officers and cadets serving under a *Force-Distributed* rating system provides evidence that the longer officers serve under *Force-Distributed* systems, the more likely they are to leave the Army. Regarding high-performers, no significant additional predictive power of the effects

of serving under force-distributed rating systems was indicated, though there was evidence that officers who were previously low-performers under *Force-Distributed* rating systems are more likely to turn over the longer they are under such a rating system.

These results support the findings of the existing literature: HI-POs are more likely to stay in their organizations when under *Force-Distributed* evaluations than their average peers. Additionally, there was no evidence that women HI-POs are any more or any less likely than their male colleagues to stay in organizations when under *Force-Distributed* rating systems, which is contrary to the turnover dynamics predicted by literature.[84]

[84] Logistic regression outcomes were as followed: Interactive variables $Female\_Force\ Distributed_{Year4}$ (β=0.93, $p \leq 0.25$), $Female\_Force\ Distributed_{Year6}$ (β=0.99, $p \leq 0.89$), & $Female\_Force\ Distributed_{Year10}$ (β=0.93, $p \leq 0.19$).

Appendix V: Family Effects

Employees' family situations may influence their turnover. Two examples of influential constructs include work-family conflict and perceived control over work-family issues. Work-family conflict is the level of work interference with family life. The perceived control over work-family issue is "the belief that one can exert some influence over the environment, either directly or indirectly, so that the environment becomes more rewarding or less threatening" (L. T. Thomas & Ganster, 1995, p. 7), such as choosing work hours, choosing a work setting, guaranteeing family-friendly vacation times, and the ability to communicate with family when at work. A recent meta-study of 178 samples found that the level spousal support and number of children/dependents are both predictors of work-family conflict (Michel, Kotrba, Mitchelson, Clark, & Baltes, 2011). Other research has shown that control is positively related to job satisfaction (Adams & Jex, 1999), which in turn is positively related to retention.

First, I examine the predicted effects of spouses on turnover. A meta-analysis of the effects of having spouses on employees' turnover found insignificant results. Specifically, it noted a correlation of ρ= -0.01 (twenty-eight studies, N_{total} =16,684), but the 95 percent confidence interval was -0.22 to +0.12 (Griffeth, Hom, & Gaertner, 2000), casting strong doubt on the magnitude and direction of the correlation. However, the context of living in the military, including the common expectations of a military spouse, may moderate different the turnover effects of having a spouse differently than in civilian employment contexts. Due to frequent relocations of military families, it is difficult for military spouses to have and develop their own careers (Castaneda & Harrell, 2008). Additionally, officers' spouses are often deeply involved in military organizations as volunteers or by providing leadership and support to the other families (Blaisure, Saathoff-Wells, Pereira, Wadsworth, & Dombro, 2012), limiting the time they have to dedicate to their own professional goals. Other research has shown that the level to which service-members' spouses are willing to support the service-members' military careers are key influences on the service-members' retention (Huffman, Payne, & Casper, 2013; Lakhani & Fugita, 1993). A study of Naval Officers found that having a spouse had different directions of correlations with turnover, based on the officers' military specialty, but none of the relationships were statistically significant. It also found

having an employed spouse was uniformly negatively correlated to turnover, but the relationship was not statistically significant. Overall, the turnover effects of a military officer having a spouse are unclear.

In contrast, number of children has been shown to potentially be a more dependable predictor of turnover than marriage. The same meta-analysis of eight turnover studies (N_{total} =9,043) that examined the effects of being married on turnover also examined the effects of having children on turnover, and found a children and turnover correlation of ρ= -0.14, but a 95 percent confidence interval of -0.29 to 0.01, signifying a $p \leq 0.10$ (Griffeth et al., 2000). Additionally, research studying Naval officers found that having children at home was shown to be a statistically significant predictor of retention in Naval Aviation officer families, but not statistically significant predictors in Naval Surface Warfare Officers and General Unrestricted Offers families (Thomas W Lee & Maurer, 1999). Overall, there appears to be weak evidence that having children in the military may predict retention.

Therefore, if West Point officers are married or have children, their predicted retention dynamics may be different than their colleagues who are single and/or do not have children.

Table 24: Summary Statistics for Family Variables [a]

Type	Variable	Obs	Mean	Std. Dev.	Min	Max
Explanatory	Family at Year 4	15,330	0.54	0.78	0	6
Explanatory	Family at Year 6	8,654	0.90	1.04	0	6
Explanatory	Family at Year 10	4,585	1.58	1.46	0	8
Explanatory	Married at Year 4	16,660	0.42	0.49	0	1
Explanatory	Married at Year 6	14,741	0.72	0.45	0	1
Explanatory	Married at Year 10	11,112	0.85	0.36	0	1
Explanatory	Dependent Children at Year 4	15,330	0.17	0.48	0	5
Explanatory	Dependent Children at Year 6	8,654	0.38	0.72	0	6
Explanatory	Dependent Children at Year 10	4,585	0.96	1.13	0	7

[a] Family is total number of spouse and children, married is a dummy variable with one being married and a 0 being single, and dependent children are the total number of children.

I ensured that adding the family, married, and children variables were statistically meaningful additions to the other independent variables in Equation 1, 2, and 3 by performing a likelihood ratio-test. In each case, *Family* is a significant addition that adds explanatory power to the regression (for Equation 1, $\chi^2 = 87.17$, $p \leq 0.001$; for Equation 2, χ^2=376.92, $p \leq 0.001$; and for Equation 3, χ^2=28.33, $p \leq 0.001$).

Similarly, in separate likelihood ratio tests, I add both *Married* and *Children* to Equations 1, 2, and 3 and find them to also be statistically significant additions that add explanatory power to the regressions (for Equation 1, $\chi^2 = 90.82$, $p \leq 0.001$; for Equation 2, I $\chi^2=377.12$, $p \leq 0.001$; and for Equation 3, $\chi^2=26.60$, $p \leq 0.001$).

Next, I check to see if *Family* predicts retaining beyond a short stay. As the *Family* variable changes over time, I test it at the end of year four, which is perhaps enough time for many officers to get married and have children, but not beyond their normal active-duty service obligation of five-years. This weakens the overall analysis somewhat, as the regression now loses all of the officers who separated from the Army prior to the end of their fourth year of active-duty. I take Equations 1, 2, and 3 and add $Family_{Year4/6/10}$. I find $Family_{Year4/6/10}$ has a statistically significant positive predictive effect on retention at all decision points, including retaining beyond a short stay ($\beta=1.08$, $p \leq 0.01$), retaining beyond a medium stay ($\beta=1.13$, $p \leq 0.01$), and retaining beyond a long stay ($\beta=1.15$, $p \leq 0.05$). In other words, every additional family member adds 8 percent, 13 percent, or 15 percent to the odds that a West Pointer will retain in the Army when in the three retention decision windows, respectively.

To further explore this, I check to see if there were different effects for being married or having children. I start with Equation 1 and add $Married_{Year4}$ and $Children_{Year4}$. I find that $Married_{Year-4}$ has a statistically significant positive predictive effect on retention ($\beta=1.15$, $p \leq 0.001$), but the predictive ability of the variable $Children_{Year4}$ is not significant ($\beta=1.01$, $p \leq 0.78$).

Next, I check to see if either being married or having children influence retention at the second and third retention decision windows. For the decision to retain beyond a medium stay, I start with Equation 2 and added $Married_{Year6}$ and $Children_{Year6}$. I find that $Married_{Year6}$ has a statistically significant positive predictive effect on retention ($\beta=1.16$, $p \leq 0.027$) and having $Children_{Year6}$ also has a significant positive predictive effect on retention ($\beta=1.11$, $p \leq 0.018$). For the decision to retain beyond a long stay, I find that $Married_{Year-10}$ has a no statistically significant predictive effects on retention ($\beta=1.09$, $p \leq 0.66$), but the predictive ability of $Children_{Year10}$ may be positive ($\beta=1.16$, $p \leq 0.06$).

Next, to investigate if having family members interacts with deployments to create different retention dynamics for West Pointers' families, I examined the literature. A study of Army Reservists found that the perceived attitudes of military spouses predicts service-member retention, and that there was evidence that this effect is moderated by the service-member being mobilized (Kirby & Naftel, 2000).

Similarly, having children may also interact with deployments in predicting service-members' turnover. The Department of Defense estimated that from 2001 to 2009, over 500,000 children in public schools have been affected by deployments of their parents due to the Global War on Terror (Department_of_Defense, 2009). Interviews and focus groups with 148 high school professionals in districts with high military child populations believed that deployments were reducing military student academic performance due to increased stress at home, anxiety/worry, and increased stress of the non-deployed spouses (Chandra, Martin, Hawkins, & Richardson, 2010). This same study, and a subsequent one, found that over 60 percent of school administrators believed military children become less able to cope as their military parents' deployments lengthened (Chandra et al., 2010; Lester et al., 2010).

To unpack this, I create two interactive variables for each decision point. The interactive variable $Married_{Year4/6/10}\_Deployed\ Years_{Year4/6/10}$ is generated by multiplying $Married_{Year4/6/10}$ * $Deployed\ Years_{Year4/6/10}$, *and the interactive variable* $Children_{Year4/6/10}\_Deployed\ Years_{Year4/6/10}$ is generated by multiplying $Children_{Year4/6/10}$ * $Deployed\ Years_{Year4/6/10}$.

To test the effects of being deployed when having family members, I start with Equations 1, 2, & 3, and added three traditional variables to each equation, $Married_{Year\text{-}4/6/10}$, $Children_{Year4/6/10}$, $Deployed\ Yearss_{Year4/6/10,,}$ and two interactive variables $Married_{Year4/6/10}\_Deployed\ Years_{Year4/6/10}$ and $Children_{Year4/6/10}\_Deployed\ Years_{Year4/6/10}$. For the decision to retain beyond a <u>short</u> stay, I find that being deployed while married had no addition predictive effect (β=0.99, $p \leq 0.81$), being deployed while having children had no additional predictive effect (β=0.99. $p \leq 0.80$), while the main effects of being married, having children, and being deployed, remain similar in direction and significance to the earlier tests.

For the decision to retain beyond a medium stay, I find that being deployed while married has no additional predictive effect on retention (β=0.99, $p \leq 0.92$), but being deployed while having dependent children has a slightly significant predictive positive effect on retention (β=1.010. $p \leq 0.065$).

For the decision to retain beyond a long stay, I find that being deployed while married has no addition predictive effect on retention (β=1.00, $p \leq 0.50$) and being deployed while having children has a weakly significant effect on predicting turnover (β=0.99 $p \leq 0.053$).

Finally, I test to see if being deployed while married or having dependent children is different for men or women. Conditioning the three above modified versions of Equations 1, 2, & 3 on being either all male or all female, I find the predictive power of deploying and having a family to generally remain statistically insignificant for both male and female West Pointers. The only exception is for female officers deciding whether to retain beyond a long stay. In this case, the interactive variable of being deployed and having children is a weak positive predictor of retention (β=1.10, $p \leq 0.079$).

In summary, examining all of these family trends across the three retention decision periods, it appears that having a family becomes more of influential positive retention factor over time (β=1.08, 1.13, and 1.15, in the retain beyond short, medium, and long stay decisions, respectively, and all were significant to at least $p \leq 0.05$). Separating families into married and children variables, it appears that being married is the most influential family factor on the decision to retain beyond a short stay, but having children become more important family factor in the decision to retain beyond a long stay.

Tastes could explain some of these dynamics. West Pointers with children may value the military lifestyle offered to their children more as they proceed through their careers, or perhaps West Pointers with children are more likely to remain in service because they have more expenses, and therefore place higher value on their relatively high job security and potential future military retirement pension.

Additionally, signals could help explain these dynamics. West Pointers could sense the Army cultural has expectations of West Point officers related to getting married and/or having children. The number of adult and child dependents an Army officer has is information viewable to promotion and selection boards. If the Army views married or single officers in ways that influence their promotions and

selections, and/or their feelings of acceptance within the Army culture, it may influence West Pointers' retention. And these expectations, if they exist, could change over the course of West Pointers' careers. For example, if the Army culture expects its young officers to marry, the direct (promotions and selections) and indirect (sense of social belonging) feedback could explain why married officers at decision points one and two are more likely to stay in the military. Similarly, if Army culture expected its older officers to have children, this same effect would potentially be explained by strength of predicted positive effect of having children at retention decision point three. Finally, being married may provide tangible help for an officer in performing their duties, resulting in the West Pointers receiving similar positive signals from their employer. For example, a spouse may volunteer to help the officer directly, by performing roles such as their spouses' unit's Family Readiness Group leader or by taking care of a greater share of home responsibilities, so their officer spouse can spend more time doing work activities. Either circumstance may result in positive signals from the military, which would likely result in more retention for younger officers.

Though being married and having children predict retention, they don't seem to be nuanced by deployments. In looking at the interactions of being married or having children with deployments, there doesn’t appear to be effects with strong statistical significance in any direction.

Table 25: Retention Dynamics with Family & Children

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Explanatory Variables	Stay Past 6, if past 4	Stay Past 10, if past 6	Stay Past 16, of past 10	Stay Past 6, if past 4	Stay Past 10, if past 6	Stay Past 16, of past 10	Stay Past 6, if past 4	Stay Past 10, if past 6	Stay Past 16, of past 10
SAT total	1.06**	0.96	1.00	1.06**	0.96	1.00	1.06**	0.96	0.99
	(0.02)	(0.03)	(0.09)	(0.02)	(0.03)	(0.09)	(0.02)	(0.03)	(0.09)
Academic GPA	0.72***	1.05	1.15	0.72***	1.05	1.15	0.72***	1.05	1.15
	(0.04)	(0.10)	(0.28)	(0.04)	(0.10)	(0.27)	(0.04)	(0.10)	(0.27)
Military Dev. GPA	1.48***	1.66***	1.16	1.48***	1.66***	1.17	1.48***	1.65***	1.17
	(0.11)	(0.19)	(0.33)	(0.11)	(0.19)	(0.33)	(0.11)	(0.19)	(0.33)
Physical GPA	0.98	0.92	1.09	0.98	0.92	1.09	0.98	0.92	1.09
	(0.05)	(0.08)	(0.22)	(0.05)	(0.08)	(0.22)	(0.05)	(0.08)	(0.23)
1-yr Prep School	1.13**	1.26**	2.27***	1.14**	1.26***	2.27***	1.14**	1.26***	2.26***
	(0.07)	(0.11)	(0.59)	(0.07)	(0.11)	(0.59)	(0.07)	(0.11)	(0.59)
Recruited Athlete	0.66***	0.74***	0.94	0.66***	0.74***	0.94	0.66***	0.75***	0.93
	(0.04)	(0.06)	(0.21)	(0.04)	(0.06)	(0.21)	(0.04)	(0.06)	(0.21)
Years $Depl_{Year4/6/10}$	0.92*	0.85***	0.9	0.92*	0.85***	0.90	0.91*	0.82***	0.94
	(0.04)	(0.05)	(0.10)	(0.04)	(0.05)	(0.10)	(0.05)	(0.06)	(0.17)
$Family_{Year4/6/10}$	1.08***	1.13***	1.15**						
	(0.03)	(0.03)	(0.07)						
$Married_{Year4/6/10}$				1.15***	1.16**	1.09	1.16**	1.16	1.23
				(0.05)	(0.08)	(0.22)	(0.07)	(0.11)	(0.35)
$Children_{Year4/6/10}$				1.01	1.11**	1.16*	0.97	1.02	1.09
				-0.04	-0.05	-0.09	(0.06)	(0.06)	(0.14)
Married x Yrs. Depl. (interaction)							0.98	0.99	1.08
							(0.07)	(0.09)	(0.12)
Children x Yrs. Depl. (interaction)							1.08	1.14*	0.87
							(0.08)	(0.08)	(0.20)
Constant	0.65	0.52	1.98	0.65	0.52	2.01	0.65	0.53	1.97
	(0.24)	(0.28)	(2.90)	(0.24)	(0.28)	(2.95)	(0.24)	(0.28)	(2.91)
Incremental χ^2	87.17***	376.92***	28.53***	90.82***	377.12***	26.60***	91.68***	381.25***	29.18***
Pseudo R^2	0.120	0.052	0.047	0.121	0.053	0.047	0.126	0.535	0.476
# Observations	13,300	5,655	1,777	13,300	5,655	1,777	13,300	5,655	1,777

* $p \leq 0.10$, ** $p \leq 0.05$, and *** $p \leq 0.01$

-The β-values are all in logistic/odds-ratio format, which is based around 1.0. A number below one is negatively predictive, and a number above one is positively predictive. Robust standard errors are listed below each β value in (parentheses). Correctly classified is a goodness of fit test for the entire model from STATA 12.1 [estat classification, cutoff (.06)], showing the percentage of time that model would accurately predict the correct outcome. All models are also controlled for ethnicity dummies, *Year-Group*, *Army-Branch*, and *Home-Region*. *Deployed Years* was intentionally omitted from these regressions, as it is a time-varying control variable. Incremental χ^2 is in comparison to the regression with use the control variables (SAT Total through Years Deployed in the table).

Table 26: Retention decision points, with standardized variables, and *Family*$_{Year4/6/10}$ as a control

	(1)	(2)	(3)
Retention Logit (Odds Ratios)	Retain beyond a short stay, (if stayed past year four)	Retain beyond a medium stay, (if retained beyond a short stay)	Retain beyond a long stay, (if retained beyond a medium stay)
1-yr Prep School	1.13**	1.26**	3.58**
	(0.07)	(0.11)	(2.25)
Recruited Athlete	0.66***	0.74***	1.12
	(0.04)	(0.06)	(0.54)
Physical GPA	0.99	0.97	1.45**
	(0.02)	(0.03)	(0.25)
Years Deployed by Year 4/6/10	0.94**	0.89***	0.78
	(0.02)	(0.04)	(0.15)
Family by Year 4/6/10	1.06***	1.13***	1.33*
	(0.02)	(0.03)	(0.23)
Female	0.99	0.79**	0.93
	(0.07)	(0.08)	(0.48)
African-American	1.34***	1.09	0.91
	(0.12)	(0.14)	(0.63)
Hispanic-American	1.04	1.13	0.99
	(0.10)	(0.19)	(0.76)
Asian-American	1.18**	0.86	0.38*
	(0.10)	(0.11)	(0.19)
Native-American	1.34	1.37	
	(0.34)	(0.53)	
Other Ethnicity	1.06	0.86	
	(0.20)	(0.26)	
Military Development GPA	1.15***	1.20***	0.70*
	(0.03)	(0.05)	(0.14)
Academic GPA	0.86***	1.02	0.86
	(0.02)	(0.04)	(0.17)
SAT Score	1.06**	0.96	0.87
	(0.03)	(0.04)	(0.15)
Constant	1.57***	1.34**	119.79***
	(0.17)	(0.20)	(104.37)
Correctly Classified	64.63%	63.73%	96.7%
Pseudo R^2	0.120	0.0529	0.101
# Obs	13,263	5,655	1,547

* p≤0.10, **p≤0.05, and ***p≤0.01

-Controls for all models include *Branch*, *Class Year* and *Geography* dummies. The β-values are all in logistic/odds-ratio format, which is based around 1.0. A number below one is negatively predictive, and a number above one is positively predictive.

Robust standard errors are listed below each β value in (parentheses). Correctly classified is a goodness of fit test for the entire model. All models are also controlled for *Year-Group*, *Army-Branch*, and *Home-Region.* The reference group for ethnic dummies is Caucasian.

-Table 26 represents the identical analysis as Table 9a, except that *Family*$_{Year4/6/10}$ is added as an independent variable and all the continuous variables, including *Family*$_{Year4/6/10,}$ *Physical GPA, Deployed Years, Military Development GPA, Academic GPA,* and *SAT Score* were all standardized (mean = 0 and standard deviation = 1), to allow comparisons of magnitude between explanatory variables.

Appendix VI: Macro-Economic Effects

Turnover can be thought of as a proxy for market information (Lazear, 1984). The advent of the internet and online job markets (e.g. Monster.com) have vastly expanded the amount of information available to workers by lowering the costs of searching for jobs and advertising them (Krueger, 2000). With the internet and social media, there is much more information for both the supply and demand sides of labor markets. Every potential external job opportunity theoretically increases an employees' risk of turnover.

Indeed, labor market conditions predict turnover (Schervish, 1983), and previous research has shown that job satisfaction's effect on turnover is amplified when unemployment rates are low (C.O. Trevor, 2001). Since the military pay scale is set by Congress and generally rises parallel to inflation, the U.S. economy is what defines the relative compensation of Army officers when compared to their civilian counterparts, as the economy's strength influences the barriers to leaving one's current job (J. March & H. A. Simon, 1958). A previous study showed that regional unemployment had a moderating effect on turnover (Gerhart, 1990). Similarly, a study of military officers found the effect of the perceived number of employment alternatives affects turnover (Steel, 1996). The strength of the economy is typically a negative predictor of unemployment and a positive predictor of number of employment alternatives. This effect has been shown to hold in the military context, as a 2003 study of U.S. Air Force pilots identified macro-economic factors (measured by unemployment rates) as having the greatest impacts on retention (Fullerton, 2003).

It follows that the U.S economy may influence the retention dynamics of West Point officers. In short, when the U.S. economy is strong, West Pointers should have more, and/or higher paying, external job opportunities than when the U.S .economy is weak. More job options predict lower barriers to leaving, which predict more turnovers.

To operationalize the strength of the economy, I use the S&P 500's average on the first of June of every year from 1989-2013 (Federal-Reserve-Bank-of-St.-Louis, 2013). Realizing that the economy's strength is not a daily, monthly, or even yearly average, I create a variable that measures the three-year-

average economic trend. For example, to calculate the economy's strength at the end of the fourth year of service for a member of the West Point Class of 1995 (which would be in June of 1999), I take the value of the S&P 500 in June of 1999, subtract the S&P 500 total from June of 1996, and divide the difference by the S&P 500's value in June of 1996. I call this variable *Economy*.

Table 27: US Economy's Strength as Measured by S&P 500

Year	S&P 500 Value on June 1st [1]	*Economy* (3-yr percentage change in S&P 500) [2]
1989	323.73	-
1990	360.39	-
1991	378.29	16.9%
1992	408.27	13.3%
1993	448.06	18.4%
1994	454.83	11.4%
1995	539.35	20.4%
1996	668.50	47.0%
1997	876.29	62.5%
1998	1108.39	65.8%
1999	1322.55	50.9%
2000	1461.96	31.9%
2001	1238.71	-6.3%
2002	1014.05	-30.6%
2003	988.00	-20.2%
2004	1132.76	11.7%
2005	1202.26	21.7%
2006	1253.12	10.6%
2007	1514.49	26.0%
2008	1341.25	7.0%
2009	926.12	-38.8%
2010	1083.36	-19.2%
2011	1287.29	39.0%
2012	1323.48	22.2%
2013	1618.77	25.8%

[1] S&P 500 levels were recorded from the Federal Reserve Board of Saint Louis
[2] Three year average percentage change is calculated with $(S\&P\ 500_{Year(T+3)} - S\&P500_{YearT}) / S\&P500_{YearT}$

Initially, I check to see if *Economy* influences retention by testing it in the model of the first turnover event of interest, staying past year six if stayed past year four. Since the *Economy* variable changes over time, I test it at the end of year four, which is perhaps enough time for many officers to get a

sense for the macro-economy, but not beyond their normal active-duty service obligation of five-years. This weakens the overall analysis somewhat, as the regression now loses all of the officers who separated from the Army prior to the end of their fourth year of active-duty, but allows the use of the *Economy* variable in understanding retention dynamics at the first decision point. I start with Equation 1, add $Economy_{Year4}$, and drop *Graduation year* dummies.[85] I find that $Economy_{Year4}$ has a statistically significant negative predictive effect on the decision to retain beyond a short stay (β=0.995, $p \leq 0.001$). In other words, for every one percent increase in $Economy_{Year4}$, there is a one-half percent greater chance a West Pointer will not retain beyond a short stay.

To evaluate the *Economy's* effects on the decision to retain beyond a medium stay, I add $Economy_{Year6}$ to Equation 2. I find that $Economy_{Year6}$ has a statistically significant negative predictive effect on the decision to retain beyond a medium stay (β=0.997, $p \leq 0.001$). In other words, for every one percent increase in the $Economy_{Year6}$, there is an one-third percent greater odds a West Pointer will not retain beyond a medium stay.

To evaluate the *Economy's* effects on the decision to retain beyond a long stay, I add $Economy_{Year10}$ to Equation 3. I find that *Economy* at year ten does not have a statistically significant negative predictive effect on the decision to retain beyond a long stay (β=0.997, $p \leq 0.502$). This makes intuitive sense, as an economic measure at year 10 may be too far removed (and no longer salient) from West Pointers' retention decisions at year 15 to make a difference in their decision process. Additionally, a West Pointer deciding whether or not to retain beyond a long stay has already shown a taste for service, and the economy variable may become less and less important over time.

Perhaps there are also generational differences in the economy's effects on West Pointers' retention decisions. The two generations represented in this study, the pre-9/11 and the post-9/11 West Point generations, may have different motivations for attending West Point. To test this idea, I ran two

[85] Graduation year dummies automatically account for the economic situation faced by each class. Doing this helps isolate the effects of the economy variable, but the overall analysis becomes less robust, as the numerous endogenous time-based effects faced by each West Point class (shocks to the Army officer personnel system like special retention incentive programs, world events, etc.) are no longer accounted for. However, it does allow the analysis to focus on the macro-economy without conflation

modified versions of Equation 1, both with $Economy_{Year4}$ added and with *Graduation year* dummies removed. For the first model, I just test those West Pointers who entered West Point before 9/11, the pre-9/11 generation (Classes of 1992 to 2005). For the second model, I tested just those who entered West Point after 9/11, the post-9/11 generation (the Classes of 2006 and 2007). The analysis indicates that this may be a generational issue, as the predictive power of $Economy_{Year4}$ for the pre-9/11 generation is significant, (β=0.994, $p \leq 0.001$), but is not a predictor for the post-9/11 generation (β=0.998, $p \leq 0.49$). In other words, if $Economy_{Year4}$ is one percentage point higher, pre-9/11 generation West Pointers have one-half of one percent *lower* odds to stay in the Army past their sixth year of active-duty service, but the post-9/11 generation West Pointers are not affected.

Knowing the post-9/11 West Pointers entered the Army in time of war, when they knew there was a strong likelihood that they would be deployed as officers, may help one understand the turnover dynamics. It is possible that applicants in the post-9/11 era came to West Point more motivated by service, as opposed to being more motivated by tangible benefits such as free tuition, a guaranteed job, and prestige. Pre-9/11 West Pointers did not have a large expectation that they would fight a war shortly after joining in the way that post-9/11 West Pointers did. Perhaps the post-9/11 West Pointers receive even higher internal satisfaction from staying the Army when the economy, and thus job opportunities, are even greater on the outside. This situation may raise the active-duty officers' perception of their own relative level of service to others when compared to their civilian peers. For example, they may feel even more satisfied by staying on active-duty during times when others, who may be motivated by strict economic utility, would likely not choose serve on active-duty and likely be sent to combat. Additionally, shocks that were not accounted for in this analysis could be causing this effect, such as wartime programs that made it more difficult for West Pointers to resign from the Army if they were assigned to a combat unit mobilized for a combat deployment, which could result in many of them staying on active-duty longer than their tastes would allow if not constrained.

Chapter 3

Realizing Exit Interviews' Huge Potential through Leader(ship) Involvement and Custom Design

Chapter Abstract

By conducting and analyzing exploratory surveys and interviews with over 200 executives representing 180 organizations around the globe, we found that most organizations conduct some form of exit interview and/or survey (EIS) for at least a subset of their employees, but the process is often siloed, and the EIS data is neither consolidated nor regularly shared with the organizations' line leaders. We also found that existing EIS programs usually do not result in positive change for organizations, even though the potential value gained through an effective EIS program is significant. Our analysis concludes that even though there is no one-size-fits-all EIS template, we present four rules of thumb for designing and implementing EIS programs that capture value for their organizations.

Introduction and Literature

> *How we treat people when they leave is just as important as how we treat them when they come into the organization.*
> *–Latin American financial services CEO*

> *We're not doing a good job with exit interviews.*
> *-European food and beverage executive*

With the advent of the knowledge economy and social networking, employees are increasingly aware of opportunities elsewhere and less likely to stay with the same organization for the long haul. Since scholars have shown that increased turnover predicts decreased performance and profit (Ton & Huckman, 2008), an organization that has lower voluntary turnover than its competitors can be at a considerable advantage. This advantage can be even more significant if the organization retains its top performers.

The exit interview and/or survey (EIS) is often the primary system organizations use to better understand and reduce turnover. Conceptually, an EIS is simple. It could be nothing more than an online

survey or an informal talk between the departing employee and a human resources representative or the employee's boss. However, an *effective* EIS program can lead to a competitive advantage by reducing employee turnover, building learning organizations, and commissioning departing employees as long-term ambassadors. Indeed, the EIS may be one of the least understood, yet potentially most powerful, employee-focused tools available to organizational leaders.

In order to understand both the scholarship and current practice of EIS, we reviewed both scholarly research and the popular business press and then conducted exploratory surveys and interviews with over 200 executives representing 180 organizations around the globe. We found that most companies currently conduct some form of EIS for at least a subset of their employees, but the process is siloed, and the EIS data is neither consolidated nor regularly shared with the organizations' line leaders. We also found that, perhaps as a result, EIS programs usually do not result in positive change for organizations.

These findings about current EIS practice are far from optimal. Therefore, we analyzed what factors predict EIS program success and concluded there is no one-size-fits-all EIS template. However, we combined the extant scholarship, our exploratory analyses, and current best practices from organizational leaders around the world to highlight four value-capturing rules of thumb when designing and implementing EIS programs: *1) recognize that the EIS should be the capstone of a recurring series of retention conversations, 2) ensure the senior line leaders are ubiquitously involved throughout the EIS process, 3) customize the EIS program with regard to the organization's specific culture and context, and 4) set the conditions that promote honesty and forthright conversations.*

This paper is organized as follows. First, we will establish the potential value of an effective EIS program. Next, we will review the scholarly foundations of turnover and the need for EIS, and also highlight what the business press is saying. Then we will describe our study, highlight our findings, and discuss their implications. Finally, we will illustrate how organizations can use the Process Analysis Model to design effective EIS programs and then offer some concluding ideas.

The Economic Value of an Effective EIS Program is Tremendous

Unwanted voluntary turnover is a global issue. In 1991, at the beginning of the knowledge economy, US workers had an average of ten employers over their adult lives (Topel & Ward, 1992). Similarly, Japanese workers, despite their reputation for lifetime employment, had an average of six employers over their adult lives (Cheng, 1991). With the advent of the knowledge economy and fewer barriers to leaving organizations, these rates, if left unchecked by organizations, are only likely to increase.

Prior research has shown that losing an employee to volunteer turnover costs an organization between 50 percent (Gemignani, 1998) and 200 percent (Bliss, 2013; Boushey & Glynn, 2012) of the employee's combined annual salary and benefits, depending on the nature of the job (Hancock, Allen, Bosco, McDaniel, & Pierce, 2011) and the employee's level of human capital (G. S. Becker, 1980; Hausknecht, 2009). Some of the direct costs of turnover include separation costs, replacement costs, and training costs (Cascio, 1991). Additionally, there are costs that are more challenging to measure, including the loss of workers' tacit knowledge, as well as the loss of the internal and external relationships required to accomplish the goals of the organization.

Though exact turnover costs are always idiosyncratic to the departing employees, past research has shown that the variance of employees' outputs increases with job complexity (J.E. Hunter et al., 1990). Indeed, the knowledge workers that characterize much of the professional services, finance, health care, information technology, and similar industries tend to be the most costly to replace due to their higher educational qualifications and knowledge requirements (Hancock et al., 2011).

Losing high-potentials (HI-POs), defined as organizations' likely future leaders (Fernández-Aráoz et al., 2011), and losing current leaders may be the most costly categories of all (Shaw, 2005), since leadership is an activity based in social-relational capital (Johnson, Griffeth, & Griffin, 2000), much of which is not portable (Groysberg et al., 2008). Also, leaders and future leaders typically have higher knowledge, skills, abilities, and education than non-managerial track employees, contributing to their higher turnover costs (Hancock et al., 2011).

Figure 1: Cost of turnover scale (linear)

Cost of turnover scale (proportion of an employee's total annual salary and benefits):

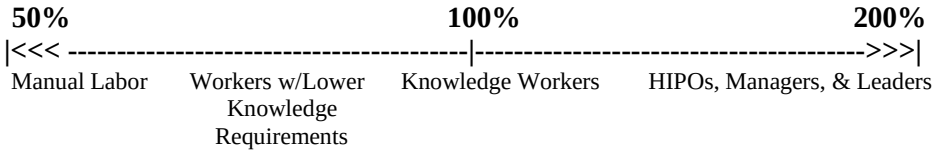
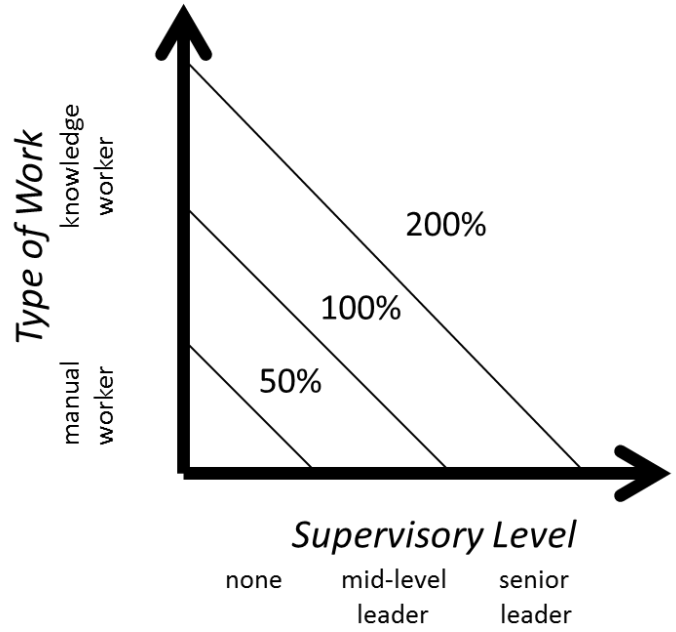


Figure 2: Cost of turnover scale (two-dimensions)



Though thoughtful EIS programs can assist organizations in many ways, reducing the costs of voluntary turnover is perhaps the most direct benefit. To examine the scale of the profit potential of a quality EIS program, we'll create a hypothetical knowledge-worker organization with 10,000 employees named *International Associates (IA),* which is typical of the organizations we studied. First, we'll assume IA initially had an industry-average voluntary turnover rate of 20 percent (i.e. they lose 2,000 employees per year), and an average per-employee pay and benefits package of $100,000. Next, we assumed that IA's senior leaders decide to intervene by establishing an effective and integrated EIS program. The primary decision is for IA's line leaders to become involved in the entire EIS process, including having

periodic one-on-one retention conversations with each of their employees. This leads to departing employees being comfortable with their EIS since it is not their first official conversation about retention or turnover, which leads to more accurate data. International Associates' leaders also ensure the EIS data is regularly consolidated into understandable reports and prioritize their time to review this data with other line leaders so that they may regularly take action on it, which results in improvements in various company policies across multiple domains. In addition to improving IA in various ways, these data-driven policy changes result in employees that are more engaged at work, because they feel as though they matter as individuals and that their input matters.

As a result of line leaders being engaged in IA's EIS process, let's assume IA's future turnover drops by (a remarkably conservative) one percentage point, from 20 percent to 19 percent, annually. This means IA's new EIS system just prevented 1,000 resignations per year (100,000 employees x 1 percent saved from turnover). Reasonably assuming the cost of turnover per employee to be $100,000, the total reduced turnover costs alone result in annual savings of $100 million ($100,000 x 1,000 employees/year). Using a standard perpetuity calculation that values the long-term value of an annual benefit, IA's new EIS program would save the organization $2 billion in today's dollars over the lifetime of the organization ($100 million savings per year divided by a conservative 5 percent interest rate).

Previous Research- The Scholarly Foundations

To discover how to best unlock these enormous potential cost savings, we started by reviewing the foundations of turnover.

March & Simon (1958) pointed out over fifty years ago that employees ask themselves two questions when they consider leaving a job “How much do I want to stay, and what are the barriers to me leaving?” Similarly, Price posited that it is the interaction between job opportunities and job satisfaction that determines an individual’s decision to stay or leave an organization (1977). Mobley expanded on this insight by showing that turnover is not one specific event but rather a serious of steps over time (1977). First, an employee considers leaving. Then, they evaluate the cost of the job search and other costs of

leaving against the benefits of staying. Next, they decide to search for a new job and compare alternative job opportunities. Finally, they make a decision to leave.

Steers and Mowday's created one of the first comprehensive turnover models, which asserted that the dominant factor in turnover is the availability of job-market information (1981). More recently, Abassi and Hollman enumerated five reasons that employees voluntarily resign: a toxic workplace environment, dissatisfaction with personal compensation, lack of recognition, a disagreeable manager, and disagreeable hiring practices (2000). Though compensation can be a reason for leaving, some considered it to be just a "hygiene factor," something that must be at a certain base level for each employee, but any monetary level above that minimum hygiene level does not translate into motivation to stay (Herzberg, 1964).

Pinning down individuals' reasons for leaving is tricky in three different ways: ontologically, because it is hard to pinpoint the initial impetus; socially, because doing so calls for understanding the individual, the context, and his or her unique experiences; and dynamically, since the decision process is multifaceted and changes over time (Morrell & Arnold, 2007). Given these complexities, an organization that claims to understand its own turnover is probably fooling itself.

Exit interviews give a departing employee an opportunity to voice his or her views and doing so is valuable (Kochan, 2012). Providing such a forum may reduce turnover. Freeman and Medoff's study concludes that workers who feel they have a voice in their companies' affairs exit less (1984). A well-run EIS program will give employees this voice, which can have a positive effect on retention and produce useful positive information for organizations.

Employee loyalty is eroding as portability of skills grows. What educated young workers today want most from their employers is portable human capital that will make them employable at other organizations in the future. In today's volatile economy, workers increasingly resemble nineteenth-century craft workers who sought to diversify their skills to defend against unemployment (Jacoby, 1999). The labor-market-triggered turnover that results in adverse consequences for organization performance in the short run (Baron et al., 2001). This trend is persistent through economic cycles, and Cappelli has

demonstrated that competition for talent will continue even as overall demand for labor rises and falls (Cappelli, 2000).

The goals of EIS have traditionally been to improve organizations and minimize unwanted turnover by (1) learning more about turnover in order to strategically assess and reduce it, (2) identifying practices and policies that employees perceive as suboptimal, (3) identifying poor supervisors, (4) pursuing public-relations goals by turning departing employees into ambassadors, (5) providing catharsis for departing employees, and (6) fixing organizational problems (Flint & Webster, 2011; Knouse, Beard, Pollard, & Giacalone, 1996; Lefkowitz & Katz, 1969).

Previous Research- the Business Press

Most of the business literature reviewed by the authors viewed EIS as potentially valuable to organizations, though the EIS programs studied were often poorly administered and, therefore, largely ineffective. These authors often recommend techniques to improve EIS effectiveness, such as using trained independent interviewers, conducting interviews on an ex-post basis, using a consistent core of questions with open ended responses, ensuring the data is provided to management for synthesizing with other org data, and to take actions on findings (Branham, 2012).

However, some in the business press consider the traditional isolated EIS as an excuse for not having meaningful conversations with people while they were still employees (Corcodilos, 2013). Indeed, some in the business press see EIS as a worthless HR activity and challenge the EIS paradigm as being too little, too late. As an alternative, one author suggests having regular retention conversations in which leaders ask employees why they are staying and what it will take to keep them in the future (Milhizer, 2013).

Our Study

Though there were many similar EIS themes throughout the scholarly and business literature, overall, we found the existing ideas to not be definitive and to often be contrary. Therefore, in 2012 and

2013, we surveyed 190 executives and interviewed 35 senior leaders to find out their organizations' best EIS practices. Collectively, the participants represented 210 organizations in 33 industries, headquartered in over 35 countries, including North America, Latin & South America, Africa, Europe, Asia-Pacific, the Middle East, and Australia. Many of those interviewed were personally responsible for leading the exit process at their organizations. Additionally, several participants were in transition and leaving organizations themselves and reported on their own personal EIS experiences and recommendations.

Current EIS Practices [86]

Of the 210 organizations we examined, we found that having an EIS program was relatively commonplace. However, the programs' effectiveness – what happens to the information gained – and the resulting impacts all varied significantly. Specifically, 79.4 percent conducted a variation of an EIS for at least some of their departing employees. Of the organizations who conduct EIS, 67 percent ask their Human Resources Department (HR) to conduct the EIS, 18 percent have the employees' direct supervisors conduct it, 9 percent are led by second line managers, such as the division-head, and 1 percent are led by external consultants. Additionally, just over 8 percent of organizations use more than one interviewer in the same EIS session. A scant 4.1 percent of organizations use questionnaires, sometimes as the sole EIS event (2.7 percent) and sometimes (1.4 percent) in addition to in-person or telephonic interviews.

"Taking Action" is a Measurable Output of Effective EIS Programs

Information is only useful if it informs decision making. Likewise, EIS programs' effectiveness should be measured by the amount of resulting positive change. So we decided to examine the relationships between how companies structure their EIS programs and one of the desired outcomes, which we define as *Some action taken*. Rather than judging the type and effectiveness of action taken, we used our EIS survey and interview results to measure *if* organizations were taking some action based on

[86] See Appendix 3.

the EIS data they received, signifying they are learning organizations. Since employees who feel they have a voice that matters are more satisfied, *Some action taken* may also predict lower future turnover. We also coded the responses in regards to specificity, since the question asked for the description of a specific response. Our analysis assumes that *Some action taken* is a positive signal of an EIS system's effectiveness. Likewise, it assumes a *Specific action taken* is a very positive sign.

Knowing great organizations design their processes with specific results in mind, we asked the executives with EIS programs to name a specific action taken as a result of an EIS (e.g., a policy change or intervention in HR, operations, marketing, etc.). We found that fewer than 50 percent of the executives could confirm that there was *Some action taken* from any EIS in their organization. Even more alarming, only 33 percent could cite a *Specific action taken* as a result of any EIS. In other words, over one-half of existing EIS programs may be all talk and not much action (follow up).[87]

To better understand the decoupling of EIS from action, we asked a subset of executives whether the data gained from EIS was regularly consolidated and if and how it was shared with senior management. Though 67 percent of the executives interviewed said their organizations consolidate EIS data, only 22 percent of their organizations regularly shared that data with senior management.[88] In other words, most organizations go through the motions of conducting the interviews, few consolidate the data, and fewer still exploit the value of the information by delivering it to decision-makers. Additionally, for those few organizations in which the EIS data gets to decision makers, some organizations routinely fail to take it seriously and act on it.

Four Rules of Thumb for Developing a Value-Capturing EIS Program

Much scholarly research and business press have been devoted to discovering exactly *what* an organization must do to have an effective EIS program, but when examined comprehensively; the lessons learned are not what to do, but *how* to do it. Even though our literature review and research showed there

[87] See Appendix 3.
[88] See Appendix 13.

is no cookie-cutter solution to designing an effective EIS program, we identified four rules-of-thumb that can lead to a sustainable competitive advantage.

1) The EIS should be the capstone of a series of regular retention conversations. EIS programs have historically been incorrectly characterized as stand-alone events focused on turnover and organizational failure. In reality, the most effective EIS programs understand that the EIS is the capstone events of a series of ongoing retention conversations focused on organizational learning and relationship building.

Structured at least semi-annually, these regular retention conversations should ask all employees, individually, why they are choosing to *stay* with the company and what things they experience at work that lowers that desire. Many employees, especially high-potentials, voluntarily leave when they perceive a lack of development, and these retention conversations will keenly help identify issues before they lead to turnover. If preceded by regular retention conversations, the EIS will not be the first conversation organizations have with departing employees about their feelings and ideas. Therefore, the EIS is much more likely to be a low-stress experience, honest, and useful to both parties. Finally, most employees will appreciate organizational leaders taking the time to seek their feedback. This is a way of regularly honoring employees' individual value, which, if they ever decide to leave the organization, makes it much more likely that they will act as unofficial ambassadors.

Even if EIS are not interwoven into a larger series of retention conversations, making EIS mandatory for all employees is an excellent starting point. We found that some organizations conduct EIS with all of their employees, some with all of their professional employees, some with just their executives, while others conduct them with just high-potential employees. Testing the strengths of each these various approaches, we found that, on average, across all regions, industries, and organizational sizes, the likelihood of specific action resulting from an EIS program increases if the organization makes EIS mandatory for *all* employees.

2) Line leaders must be involved throughout the EIS process. It is clear that the involvement of line leaders makes or breaks the effectiveness of organizational EIS programs. The organizations with the

most effective EIS programs often have their CEOs personally setting and resourcing EIS program goals, personally leading individual EIS for mid-or-low level employees, regularly pouring over consolidated EIS data, and demanding action as a result. Additionally, second-level supervisors who conduct EIS and make appropriate policy changes from the results are showing individualized concern for their subordinates, which engenders trust. Though the best person to lead each EIS depends on the employee and the organization's context and EIS goals, our study showed that EIS led by second-line managers are the most likely to lead to specific action being taken.

3) Customize the EIS program according to the organization's industry, geography, and size.

There is wisdom in also designing an EIS program with industry in mind. For example, there was substantial variation among industries in percentage of post-EIS action taken. The industries with the highest likelihood of taking action based on EIS data include management consulting (65 percent) and non-profits (57 percent), while the industries with the lowest likelihoods of taking action were utilities (20 percent) and education (11 percent). These nuances may indicate organizations with the highest densities of unionized workforces may have additional challenges for EIS programs.

Table 1: EIS Trends by *Industry group*

Industry Groupings	# Companies	Formal EIS Program	EIS done by HR	EIS done by Direct Supervisor	EIS done by Senior Mentor (s.m.)	EIS done by Consultant	EIS Include a Questionnaire	Some Action Taken	Specific Action Taken
Overall	210	79%	67%	18%	8%	1%	4%	47%	35%
IT & Telecomm	26	80%	85%	10%	5%	0%	10%	57%	38%
Professional Services	98	77%	67%	19%	12%	1%	4%	54%	39%
All Others	86	82%	61%	19%	6%	1%	3%	35%	27%

In addition to understanding the context of certain industries, understanding regional dynamics and local culture is also important. For example, the Asian-Pacific organizations we studied were the most likely to conduct mandatory EIS (92 percent), although they were the least likely of any region to take action afterwards (only 43 percent). Since Asia currently has the tightest market for skilled labor, the results may indicate that companies in tight labor markets are recognizing EIS as a way to improve their

organizations through talent management but are not taking the deliberate steps of ensuring the EIS process leads to actual outcomes. This unusually high formal-EIS-program to action-taken ratio of Asian organizations could be explained if Asian organizations, on average, perpetuate a culture of strong respect for authority. Knowing this, cultures where there is a strong respect for authority could consider additional methods of ensuring frank conversations are valued in their organizational cultures and their employees are protected from retribution, such as using third-party consultants or post-employment interviews.

Table 2: EIS Trends by *Geography*

Geography	# Compan-ies [a]	Formal EIS Program	EIS done by HR	EIS done by Direct Supervisor	EIS done by Senior Mentor (s.m.)	EIS done by Consultant	EIS Include a Questionnaire	Some Action Taken	Specific Action Taken
Overall	210	79%	67%	18%	8%	1%	4%	47%	35%
Asia-Pacific	24	92%	55%	27%	9%	5%	5%	43%	30%
Africa	7	86%	50%	17%	33%	0%	0%	43%	29%
North America	76	84%	70%	13%	9%	2%	8%	86%	30%
Europe	80	76%	72%	20%	5%	0%	2%	100%	39%
Middle East	9	67%	50%	33%	33%	0%	0%	50%	25%
Central/South America	11	64%	56%	11%	0%	0%	0%	75%	63%

[a] Three of the organizations studied did not share a location.

Finally, our results indicate that an organization's size matters when designing the EIS. Interestingly, the use of a questionnaire as an EIS method predicts a high likelihood of a small company taking action but a low likelihood of a large company taking action. This could be because leaders of small organizations know most or all of their employees, and a questionnaire may be perceived by the departing employees as a mechanism for needed anonymity in the midst of more personal organizations. On the other hand, a departing employee in a company of thousands of people may feel being asked to complete an anonymous survey is just another example of not being important to the organization as an individual.

Table 3: EIS Trends by *Organization size* (# of personnel)

# Employees	# Organizations [a]	Formal EIS Program	EIS done by HR	EIS done by Direct Supervisor	EIS done by Senior Mentor (s.m.)	EIS done by Consultant	EIS Include a Questionnaire	Some Action Taken	Specific Action Taken
Overall	210	79%	67%	18%	8%	1%	4%	47%	35%
≤ 100	38	66%	56%	24%	24%	0%	4%	61%	50%
100-1,000	89	87%	75%	16%	8%	0%	3%	48%	36%
1,000-10,000	47	81%	58%	21%	3%	5%	0%	46%	34%
+10,000	33	77%	63%	13%	8%	0%	17%	18%	12%

[a] Three of the organizations studied did not share number of employees.

To be more rigorous in our analysis of what predicts higher likelihoods of *Some action taken* or *Specific action taken*, we designed and tested several regression models. The first model assessed the complete dataset without conditions, and we found that the only predictive factor is organizations that formalize their EIS programs are more likely to have *Specific action taken* as a result.[89] This lack of predictors is a significant finding in itself. We interpret it to clearly state that there is no one-size-fits-all solution for designing EIS effective programs.

Yet predictors emerge if we investigate the same questions of what best predicts EIS success within the contexts of different *Industry groups*, *Geographies*, and *Organization size*. Our customized analyses found the following factors predict EIS success within the following contexts:

Table 4: Positive predictors of *Some action taken* [90]

	Formal EIS Program	EIS done by HR	EIS done by Direct Supervisor	EIS done by Senior Mentor (s.m.)	EIS done by Consultant	EIS Include a Questionnaire
Industry groups		IT & Telecom	IT & Telecom		Professional Services	IT & Telecom
Geographies	North America	Central & South America	North America, Central & S. America		Asia-Pacific	Asia-Pacific
Organizational size (# personnel)				1,000-10,000		Under 100

[89] See Appendix 5, Model 1, and Appendix 6, Model 1.
[90] See Appendixes 5, 7, & 9.

Table 5: Positive predictors of *Specific action taken* [91]

	Formal EIS Program	EIS done by HR	EIS done by Direct Supervisor	EIS done by Senior Mentor (s.m.)	EIS done by Consultant	EIS Include a Questionnaire
Industry groups	Professional Services	IT & Telecom	IT & Telecom		Professional Services	
Geographies	North America		Central & S. America		Asia-Pacific	
Organizational size (# personnel)	100-1,000			1,000-10,000		Under 100

Though not strongly predictive, Table 4 and Table 5 could be used as starting points for discussions on designing EIS programs. For example if the goal of an EIS program is to generate *Specific actions*, and the organization is a professional services firm with 100-1,000 employees, the organizational leader should consider formalizing the EIS program and hiring external consultants to lead the EIS.

Though the contextual predictors of EIS effectiveness were derived through regressions, the results should still be considered exploratory in nature and useful primarily to highlight that different EIS design factors may or may not be more appropriate depending on the contexts involved. Indeed, every organization is unique and defined by *Industry*, *Geography*, *Organizational size*, and many other categories. Yet, by closely examining these varying characteristics and cultures of their organizations, wise leaders can customize their EIS programs to be as effective as possible.

4) Set conditions that promote honesty and forthrightness. The usefulness of the EIS is completely dependent on the honesty and forthrightness of departing employees (Hinrichs, 1975; Knouse et al., 1996), which is fickle and can vary widely. A departing employee may also be in a heightened emotional state, since changing jobs is typically stressful, and interpersonal drama with colleagues could have entered into the departure; thus, getting a "rational assessment of the situation from an employee who is still emotionally involved" is difficult at best (Lefkowitz & Katz, 1969, p. 24). Furthermore, the recent trend toward shorter-term employment makes for weaker bonds of trust and commitment between

[91] See Appendixes 6, 9, & 10.

employees and their organizations (Jacoby, 1999). Thus, thoughtful interview design to maximize honest feedback is paramount.

Several factors promote dishonesty. Exiting employees naturally shrink from providing information that could be harmful to themselves. Some feel pressed for time or unmotivated to explore their feelings. Additionally, honesty is also shaped by the departing employee's attitude toward his or her supervisor and toward authority in general. Those with a positive attitude toward authority typically withhold negative information to avoid giving offense, but freely share positive information; those with a negative view of a particular supervisor tend to avoid discussing him or her at all. Other factors that may affect EIS honesty are social anxiety, self-monitoring ability, need for approval, fear of managerial backlash aimed at friends of the departing employee, and Machiavellianism (Knouse et al., 1996).

The individual's reason for resigning also affects honesty. Scholars Lefkowitz and Katz (Lefkowitz & Katz, 1969) performed a two-stage experiment on the reliability of exit interviews where employees first articulated their reasons for leaving before departing, and were again asked via a mailed questionnaire approximately six months later. Among employees who had initially claimed avoidable reasons for resigning, such as dissatisfaction with the work or working conditions, relations with peers or supervisors, or compensation, the authors found major discrepancies between the two interviews in 75 percent of the cases. When analyzing employees who claimed unavoidable reasons for resigning, such as family demands, pregnancy, relocation, lack of transportation, and a return to school, only 26 percent of responses exhibited major discrepancies.

Interviewees may be disinclined to share their true reasons for leaving if these are controversial or derogatory. The departing employee may anticipate needing a letter of recommendation, and most job applications call for previous supervisors' names – making candid conversations risky. Though organizations should design their EIS systems around promoting honest responses, they should also realize that most employees will be honest, especially if firm leaders have led regular retention conversations. A global high-technology company executive explains, "Understanding the various contexts of departing employees can help. And there's always the issue where you have a segment of

people who, on exit, do not want to say anything bad, because they feel like there's no value in doing that, and then you have others who are really pissed off and have only bad things to say … we have a nice group in the middle that actually have thoughtful, constructive, and honest ideas."

> *Seventy percent of employees are forthright about their reasons for leaving. [As for the others] I might get part of the truth, not the whole truth. We have [departing] employees who say 'I would tell you a lot more but don't want to burn bridges' or 'I would say more but don't want to cause conflicts.'*
>
> *- Global Food & Beverage Corporation, HR Executive*

> *Are people really honest with you during exit interviews? Are they really going to tell you they are leaving because they don't like their boss? Probably not, because they want references from that job.*
>
> *- European Mining Company, Senior VP of HR*

Designing the EIS program using the Process Analysis Model

To apply the four EIS program rules-of-thumb, organizations would be wise to use the Process Analysis Model of *Inputs* → *Process* → *Outputs*. A suggested sequence is below.

a) *Process Analysis Model* step 1: Inputs

The first design question is to determine which inputs are needed to achieve an effective EIS system. The most fundamental inputs question is: What are the goals of your organization's EIS program? If organization leaders decide to establish (or improve) an EIS process, they would be wise to define their goals in doing so, because if they are uncertain of what they hope to attain, the EIS program will likely be unsuccessful.

An effective EIS program should help the organization understand what their employees are thinking. Foundational human resource scholarship shows us that employees ask themselves two questions when they consider leaving an organization, namely 'how strongly do I want to leave?' and 'what are the barriers to my leaving and future success?' (J. March & H. A. Simon, 1958). Altogether, we suggest organizations consider the following six EIS goals[92]:

1. *Learn about current personnel practice issues.*

[92] Goals 1, 2, and 3 probe the question "How strongly do I want to leave?" Goal 4 examines "What are the barriers to my exit and to future success?" Goals 5 and 6 pursue *targets of opportunity* (low- hanging fruit).

2. *Learn about employees' perceptions of the work itself, including job design, working conditions, and peers.*

3. *Evaluate managers' quality and leadership styles.*

4. *Learn HR benchmarks (salary, benefits, etc.) at competing organizations.*

5. *Foster innovation by soliciting exiting employees' views on issues and potential improvements above and beyond their workgroups, such as the ideas about their division's strategy, operations, systems, and marketing.*

6. *Commission unofficial ambassadors by honoring departing employees with goodwill and thanks, making former employees into lifelong recruiters, business developers, public-affairs specialists and possible future rehires.*

Scholarly research has shown that employees have strong feelings about their organization's personnel practices (Baron et al., 2001). To discover these feelings, organizations that conduct EIS almost always pursue Goal #1 but often focus on salary and benefits. Though salary and benefits are important, they usually are not the primary reasons for a departure. A Vice President for Human Resources at a global automotive supplier reminded us "Very rarely is it a financially motivated reason why they leave."

Most organizations who conduct EIS also seek to learn about Goal #2, which seeks to inform leaders about employees' experiences and perceptions about their workplaces. Learning about their workplace can help managers optimize job design, efficiency, coordination, and effectiveness.

Goal #3 equips the organization to reinforce positive managers and identify toxic and ineffective managers. Organizations who want to accomplish this goal will ensure someone other than the exiting employees' direct supervisors conduct the EIS. As a global automotive HR executive explained, "More often, [the reason for an employee's resignation] is an issue with the direct supervisor".

Wise organizations pursue Goal #4 to keep salaries and benefits competitive with those of rivals. "We use exit interviews to see how competitive we are against other employers: time off, ability to advance, different benefits and pay packages ... we want to see who is poaching our people," explained a global food and beverage HR executive.

The final two goals of the EIS program, fostering innovation and commissioning ambassadors, are emerging best practices and are less commonly pursued. Regarding Goal #5, fostering innovation, departing employees are valuable sources of information beyond just their specific workplaces, such as offering perspective on what it is like to consume that company's products and services. Therefore asking employees for feedback on topics beyond their direct responsibilities has been shown to be useful to organizations (Macafee, 2007). A natural bridge for doing this would be to ask a few identical questions from existing employee-morale surveys, in order to give the organization longitudinal data, which shows trends and makes the combined data especially informative (Macafee, 2007). Asking a departing employee to help foster innovation is an ideal way to solicit informed ideas, along the lines of "Complete the sentence, 'I don't know why the company doesn't just ...'"

Goal #6, commissioning unofficial ambassadors, is the aspiration to create lifelong advocates for the organization. Indeed, former employees who are proud of their former service and affiliation are apt to recommend their former organizations to potential employees, to use and recommend the organization's products and services, and to create business alliances between their old and new organizations. "You want [a departing employee] to leave as an ambassador and customer," said a North American financial services executive.

After setting the goals for the EIS program, the other design input needed is for the organization to decide how to manage their organization's EIS program. Perhaps our study's most troubling finding was that, in most organizations, EIS is completely an HR function. Indeed, HR is often tasked to conduct the interviews, and more often than not, HR is solely responsible for the data-consolidation process and only shares data with management during the rare times when directly asked.

In short, unless the CEO decides to own the EIS program, it will likely remain an HR-centered project with little impact. Though most HR Directors are highly competent, they may not have the full backing of line leaders, especially with regard to a comprehensive undertaking such as an EIS program, which, if done well, has a *lagged* positive effect on performance. The director of HR can administer the

program on a day-to-day basis, but it is imperative for the CEO to take ownership of its design, execution, and results.

A best practice from prior scholarship that overcomes a silo effect is for the CEO to create a *Talent Retention Steering Group* (TRSG) (Macafee, 2007). The TRSG is an action-oriented committee of stakeholders including the Director of HR, the most senior line managers below the CEO, and a rotating set of promising employees at different seniority levels from various workgroups. The TRSG oversees and coordinates the entire talent-retention process, including EIS. To be effective, the TRSG should meet monthly and should brief their findings and recommendations to the CEO, in person, no more than every two months. The key to the TRSG is both the line leader involvement and the regular CEO involvement.

When asked about the costs of implementing an effective EIS program, most executives speculate that the potential economic and cultural benefits would far outweigh the likely costs. "I see a cost of *not* doing exit interviews, there is no real cost to doing them," shared a global consumer products company Director of HR. Executives at professional-service organizations that bill hourly, and at consulting organizations in particular, were especially wary of the costs of performing exit interviews, though the benefits would presumably be substantial when considering that turnover at professional-service organizations is typically high. "We used to do a second exit interview two-to-three months later, but we cut it for cost reasons," a global management consulting company executive commented. They continued, "We did it back in the old days, particularly with people we wanted to hire back." Unfortunately, they admitted this cut may have saved resources in the short run, but resulted in less EIS program effectiveness and greater overall costs in the long run.

<u>Should organizations train the interviewers?</u> As early as 1969, scholars argued that organizations need to train their interviewers in face-to-face and telephonic interview techniques (Lefkowitz & Katz, 1969). Similarly, if an organization decides to use a paper-and-pencil questionnaire or a web-based survey, its authors should be trained in survey design. Conducting interviews is always challenging, but the added emotional load of a resignation means that the interviewer or questionnaire designer needs skill to reach the heart of the matter. As one global mining HR executive put it, "I want to tap into emotion,

and I fear sugar-coating, which is likely in our small industry where people know each other. You have to dig for the real issue."

Should organizations prioritize EIS for certain groups of employees? Interviewing all departing employees is the best case. Yet, when money and time are constrained, organizations may need to limit EIS to certain groups of employees. Our study revealed that the organizations with the most progressive programs prioritized conducting EIS with their HI-POs even if no other exiting employees were interviewed. Research has shown that HI-POs tend to leave their organizations at a higher rate than average employees (Munk, 1998). In fact, HI-POs and employees who are highly active in non-work organizations have less psychosocial attachment to their employers than the average employees, and they are therefore more likely to leave if their expectations are not met (Trank et al., 2002). Thus, those most in need of exit interviews may be HI-POs, and this alone makes a quality EIS program a strategic imperative. "When there's a HI-PO leaving, we would want to know everything about it. We would screen them upside-down and talk to them," a global telecommunications executive said. They continued, "I sit them down [personally] and ask them, 'What do you want to do with your life?'"

b) *Process Analysis Model* step 2: Process

After planning the inputs through deciding on EIS program goals and how to manage the EIS program, the organization's next step is to decide how to conduct the EIS itself, i.e. the process. This includes answering the following questions:

Should the EIS be one, two, or three interviews? We found that practitioners and scholars alike believe conducting two exit interviews – one while the employee is still there and one after a cooling-off period a few months after departure – is a particularly effective way of getting honest and forthright data. Prior research about two-stage interviews showed that EIS responses received at the time of resignation were much different than responses from questionnaires mailed several months later, when 59 percent of them reported different reasons for leaving than during their initial EIS. In this same study, every employee who had initially given no specific reason for leaving shared specific reasons when asked

several months later (Lefkowitz & Katz, 1969). In sum, those who were less than forthright during their EIS while still employed were much more forthcoming after they departed.

As for timing, an interval of three-to-six months between the initial interview and follow-up EIS seems to be a best practice in many successful two-stage EIS programs (James L Price & Mueller, 1981), though some organizations have had success scheduling multiple EIS phases before the employee's departure. "When we find out someone is leaving, we'll send that employee an email and a link that goes to an [online survey]," a global food & beverage executive explained. "Additionally, the HR coordinator schedules time to go through their written survey face-to-face on their last day of work."

Other organizations plan three-phase EIS programs. A North American food and beverage executive explained his organization's successes, "One of the things that we did with great success was that we sent a follow-up survey, if you will, about two to three weeks after the individual separated, and allowed them to complete it, multiple choice with some open-ended areas. And then a follow-up phone call was made with that departed employee to further discuss what they filled out." A European retail executive agreed, "You should always have at least two exit interviews."

When and where will the interview take place, and how long will it last? Employees typically announce their intention to resign anywhere from two months to one week before departing, a range that makes for wide variation in the possible timing of the initial interview. Accordingly, there is evidence that the EIS's timing affects its success. Researchers have argued that the most productive timing is at the mid-point of the notification period, after the emotion surrounding notification has died down but before mental withdrawal has set in (Macafee, 2007). Nevertheless, most EIS are conducted during the last week of an employee's tenure (Garretson & Teel, 1981). Regardless of the exact timing, EIS should be conducted *after* an employee receives his or her final performance evaluation. A Middle Eastern manufacturing HR manager explained, "We conduct exit interviews in the middle of their typically 30-day resignation period, which is best. They aren't hesitant to share after a couple of weeks [of making their departure announcement], but by the end they are more internally focused and challenged." An automotive industry executive advocated waiting a month after departure before doing the EIS, "We

typically do the exit interview about a month later, and at this time, it's much more relaxed. This is especially if the person who left was a HI-PO. They normally tell us very honestly the reason, and it is very value-adding at this point. Very often, we start programs to work on the problems."

Although perhaps less important than timing, the location of an in-person interviews should also be chosen thoughtfully. A private setting such as a conference room typically works well. Also, several organizations have found that the informality of a relatively private area within a public space, such as an atrium or dining room during low traffic hours, can result in more reliable feedback than the actual workplace setting or the interviewer's office.

Recommendations vary on the optimal length of time for an EIS. Some executives recommended planning for brief in-person interviews (30-60 minutes), with an option to keep talking should the conversation merit it, while others recommended a planned time up to 90 minutes. A best practice was to schedule 30 minutes for the interview, but to allow for an additional 45 minutes at the end in case the employee would like to continue talking.

What interview method will our organization use? Organizations should select an interview method that best inoculates their employees' social-desirability bias—saying what the interviewers want to hear—is essential to an effective EIS process. A face-to-face interview can generate rapport, as communication is often enhanced by nonverbal signals, eye contact, tone of voice, speaking style, and vernacular speech. Telephone interviews also possess some of these benefits, and some observers consider them as effective as face-to-face meetings. Additionally, telephone interviewing can also be more convenient and easier to schedule (Knox & Burkard, 2009). Some scholars also found that telephone interviewing elicits greater honesty than face-to-face meetings (De Leeuw & Van der Zouwen, 1988), and concluded that the additional cost of in-person interviews was not justified because the quality of the data collected from phone interviews was similar (Siemiatycki, 1979). Though the authors generally recommend face-to-face over telephonic interviewing, keeping each of these in mind, the TRSG should carefully consider the costs and benefits of different types of interviews and the particular questions to be asked.

Impersonal EIS methods, such as questionnaires, can be an important part of a larger EIS program. These techniques can have drawbacks, such as being the least likely methods to build rapport or to pick up on the informative nuances of respondents' tone and tempo of voice and body language. Understanding this trade-off, some organizations use computer-based or paper-and-pencil interviews to eliminate social interaction from EIS (Martin & Nagao, 1989; Nass, Moon, & Carney, 1999). Research has shown little difference between employees' responses to paper-and-pencil questionnaires and those administered by computer (Booth-Kewley, Edwards, & Rosenfeld, 1992). "An electronic survey is helpful: you feel a sense of being more anonymous, and it gives them space to address the questions at their own pace and at their own desks," expressed a global food & beverage executive. Yet with the web-based social-media culture, web-based interviews may be susceptible to social media bias concerns as not being completely anonymous. Considering most modern employees are social media-users, a computer may no longer be seen as a private device, but, rather, more of a social tool that is at risk of catalyzing the same social desirability bias as face-to-face interviews. In summary, if the company views rapport as most important, face-to-face interviews may be the best choice. If expense and convenience are paramount, phone and web-based interviews may be advantageous. If avoidance of social-desirability bias is a prime consideration, a pen-and-paper questionnaire may be an attractive option for one stage of larger EIS process.

Who should conduct the interview? Prior research suggests that interviews performed by HR professionals or independent consultants elicit the most accurate information. EIS performed by direct supervisors can result in inaccurate data about the employees' reasons for resigning because interviewees are not always candid with their former superiors (Hinrichs, 1975). Yet, company HR professionals are still considered part of the company, and, therefore, departing employees may still be reluctant to be forthcoming. Therefore hiring a third party to conduct EIS can be ideal (Macafee, 2007).

We found that interviewers from HR have higher likelihoods of getting forthright feedback than direct managers, but having HR as the interviewer puts an additional level of bureaucracy between the information gained and the authority for corrective action. Alternatively, we found companies who have

the second-line managers conduct the EIS often achieve the best of both worlds. The second-line managers typically receive honest feedback due to a degree of separation from the direct supervisor AND are in a position of authority to take immediate and effective action. If any organization decides to hold more than a single interview, a best practice is to have types of interviewers for each event. Telephone interviews and web surveys are more efficient than face-to-face conversations but are typically best used as compliments before or after face-to-face interviews, which are essential when honoring employees and promoting long-term ambassadorship.

For the follow-up interview post departure, a best practice is to hire an external consultant. An external consultant typically has several advantages over an internal interviewer, including having specific training in exit interviewing, the ability to generate reliable data from being categorically unbiased, and perhaps being even less expensive overall by allowing the HR department and line-leaders to remain focused on the tasks for which they have more expertise. A North American food and beverage executive in charge of leadership development shared, “if the person leaves, we get an external organization to call them because we don't want to badger them.” A European retail executive agreed, adding that at least one of the interviewers should be someone the departing employee "has had no previous interaction with and who will just listen and try to understand what you’re describing. That way he or she will not be tempted to jump to conclusions.”

What topics will be discussed and what question structure will be employed? The structure of an interview can affect its outcome. Unstructured interviews can yield unexpected responses, though researchers have shown this approach makes it more difficult to consolidate the information gained, especially when turnover is heavy (Knox & Burkard, 2009). The strength of standardized interview questions is that they allow the identification of trends (Singleton & Straits, 2002). However, standardized interview questions rarely elicit unique ideas and may unintentionally communicate the message that employees are not individually important to the organization but just another number. An attractive best practice is the semi-structured interview, which uses a combination of specific questions to enable the advantageous of consolidation of data in a useful way for decision makers, as well as open-

ended questions, which enable departing employees to express their idiosyncratic feelings and recommendations in detail (DiCicco-Bloom & Crabtree, 2006).

When questioning departing employees, interviewers should consider probing for several frequent areas of dissatisfaction while leaving room for unexpected explanations. The Head of Learning at a European multinational food and beverage corporation cited the primary cause of departing employees' dissatisfaction was lack of development followed by dissatisfaction with managers. In a distant third, but still worth asking about, was compensation.

Some scholars recommend a non-directive interview technique in which interviewers avoid displays of authority; they merely listen in a patient and friendly manner, occasionally asking open ended questions and speaking only enough to prompt the interviewee or steer the discussion toward an important topic (Schoenfeld, 1957). A global conglomerate executive explained, "Feedback is a gift to the receiver. [We ask] 'If you would be willing to gift us with your feedback, we are here to listen. We want to learn how to be better. We hope you would view [our company] in a positive way.' Just saying that is enough to tip people. People want to be heard and acknowledged. Going through the authentic exit-interview gesture is enough."

Interviewers should refrain from suggesting possible on-the-spot fixes for problems the employees raise, as EIS usually aren't the time or place for such feedback- the purpose is to listen. For example, if a departing employee shares that their company requires too many signatures for a contract to be approved, a skilled interviewer will ask for that employee's recommended solution, but shouldn't comment on if the company will or will not implement the suggested plan. "Don't try to fix issues then. Allow [exiting employees] to vent; don't draw it out; don't second-guess management," recommended a European telecommunications executive.

Additionally, interviewers should avoid questions that could embarrass interviewees or delve into their personal lives, while focusing instead on questions framed in a positive light (R. Giacalone & Knouse, 1989). For example, managers might ask how the employees like the job (was it rewarding, challenging, easy?) and how working conditions could be improved. A potential best practice was for

interviewers to ask the departing employees what their *colleagues'* perceptions of their jobs are. Employees can answer this by providing their own true feelings through stories about their colleagues, without having to lay personal claim to them. Regardless of whether the feelings shared are actually from the departing employees or their colleagues, it is very useful to know.

By the time employees announce their departures, most have other jobs lined up. Therefore, the interviewer should consider asking about the new job but without directly asking for a comparison of the two jobs, so as not to put the departing employee in the position of defending their choice. Also, the interviewer should ask about any possible suggestions for improving the job, the workgroup, or the entire company. Finally, the interviewer should give the interviewees the unrushed option of talking about any pressing or additional thoughts.

Overall, interviewers who express authentic concern for their departing employees are likely to elicit particularly valuable and actionable information. One executive told a story about how an interviewer with authentic concern actually changed his mind from a departure decision earlier in his career:

> *I resigned after six or seven years, and my boss's boss conducted the exit interview. He swore at me and asked, "Why are you resigning?" and tore up the resignation. He added, "I'll let you go if you can tell me why you're resigning and if it's a really good reason." I told him the truth, which was that a headhunter had approached me and offered a very attractive position with another company. I also told him that at my current organization, the money was good but I wasn't getting coaching and development or performance appraisal, and I desperately wanted that. As a result of my exit interview, the company made changes and added the things I was looking for.*
>
> *-Global consumer products executive*

Should organizations use EIS to make counteroffers? Though the door should almost always be left open for strong performers to change their minds and stay, employees who announce their departures have usually already made up their minds. "We rarely make a counteroffer because our view is that if someone has gone as far as meeting with another company, talked about money and conditions and has a contract with them, they have already made up their mind and want to go," explained an European engineering services executive. Instead of leading with a counter-offer, management can build goodwill by supporting the employee in a difficult choice, even if the loss is a blow to the team. As a global

consumer products executive put it, “I’ll encourage you to go if you have a better opportunity.” Such goodwill encourages ambassadorship behavior and possibly even a return to the original organization in the future but with more skills.

c) *Process Analysis Model* step 3: Outputs

Finally, after designing the EIS inputs and processes, organizations must think through what outputs they want and what effects they want those outputs to have. These design steps can be facilitated by answering the following questions:

Once collected, how will the organization consolidate, share, and act on the EIS data? As mentioned earlier, only 67 percent of the organizations that performed EIS consolidated the resulting data and only 22 percent of those organizations regularly shared it with line managers. A talent executive for the Middle Eastern division of a multinational conglomerate added “We normally present the data to senior leadership once or twice per year as part of our succession planning and talent review discussions.” Though his organization is one of the more progressive ones in terms of sharing the EIS data, its frequency of information flow to decision makers was still surprisingly low.

The TRSG is an ideal vehicle to establish company-wide standards for consolidation, analysis, and distribution of EIS data. The distribution and timing should be deliberate and well thought out. It should consider the sensitivity of the data and protecting departing employees' candor, particularly about their bosses, with the confidentiality it deserves. Remember, if raw data from the interview goes directly to the exiting employees' bosses, the exiting employee should be told (before the EIS) that this will happen—which would likely result in a lack of candor. A potential best-practice solution is for line supervisors to only be given aggregated data on the views of their former employees periodically, to ensure confidentiality. Also, a wise organization will ensure the former employees' second-line managers receive the data regularly and use it to inform the discussions about the departed employees' supervisors' annual performance reviews.

In addition to the TRSG's monthly briefing to the CEO, a progressive organization will also require each senior line manager to personally brief the CEO during the TRSG reports. The content should include their units' EIS feedback for that period and the specific actions that will be taken in response or the specific reasons the senior line managers are choosing not to take action.

Should we report the data back to current employees? EIS data differs from the results of well-being surveys in that the company has no political obligation to report the EIS results back to the employees. A company that wants to make a difference will do so anyway, as informed employees are typically more satisfied employees (Scott, Colquitt, & Zapata-Phelan, 2007); however, organizations enjoy leeway in deciding if, when, and how to do it. Once a quarter, after one of the TRSG's quarterly updates to the CEO, a valuable technique to engender current employee ownership of EIS process would be for the TRSG to distribute a one-page summary of that quarter's trends, representative comments, and recommendations from anonymous departing employees. Along with these comments, the TRSG should include several thoughtfully selected departing employee comments from the previous two quarters and list the specific actions taken to address those previous comments. This sends the very clear message that what someone says during EIS matters and will often result in change.

Does the organization want to establish a formal ambassadorship program? The two most important periods in employees' terms of employment are the week they arrive at the organization and the week they depart. Since an exit interview is typically departing employees' final significant interaction with the organization, how the interview goes will almost certainly influence their long-term outlook of the company. "I considered each of my employees who left to remain on unofficial recruiting duty, and I shaped my actions to do all I could to make that *positive* recruiting duty," added a US government agency executive.

All voluntarily departing employees should be given the opportunity to have a departing employee farewell in a symbolic place at the organization such as its nicest conference room, a significant monument, or a central atrium. It should also be done at a convenient time when most other employees can attend. At the ceremony, the organizational leaders should thank the departing employees and give

them one or more personalized gifts such as a symbolic framed certificate or plaque signed by the organizations' most senior leaders. To promote the sense of community, organizations should consider giving them personalized gifts signed by all of their former colleagues.

In addition to honoring departing employees with public gifts, organizations should consider establishing a former employee ambassadorship program that operates like a college alumni association, such as McKinsey's *Alumni Center* and Proctor & Gamble's *Alumni Network*. Ambassadorship building requires maintaining the former employee-company relationship through regular updates, which is easily empowered by today's social-media platforms. Additionally, these alumni updates could be combined with second or third phase exit interviews via telephone. Potential best practices suggest timing these ambassadorship calls at six months, one year, and then two years after departure. Topics could include asking how the departed employee is doing, reporting what non-sensitive things the organization has been up to, and reiterating a big thank you for the departed employees' former service. As a global oil and gas executive illustrates, “Recently we introduced ‘Keep in Touch,’ where we typically ask the folks we didn't want to leave if they would mind if we kept in touch with them. And we’ve set up a structure to stay in touch on a per-annum basis. We don't bother them—usually just a telephone call. It makes all the difference.”

A company with a long-term view will also use the TRSG quarterly update document to highlight two former employees and the great things they are now doing away from the organization, professionally and/or personally. This would signal that the company cares about their employees for life, thereby building ambassadorship and trust with current employees.

Additional Recommendations from the Authors

Considering the inconclusive and sometimes contradictory findings of prior EIS research, as well as the lessons learned from our study of current and best practices from the field, some additional general recommendations from the authors follow. Of course, all organizations should consider their people, their goals, and their resources carefully when designing an optimal EIS program.

Let the employee choose the settings, timings, and interviewers. Approach your departing employees early and let them choose the settings and timings of the EIS. Scholars recommend letting a departing employees choose the face-to-face interviewers: their direct boss, the boss's boss, an HR person, or an outside consultant (R. Giacalone & Knouse, 1989). Employees who are comfortable with the interviewers and contexts are likely to be more forthcoming, and to feel honored that the company cares enough to offer them a choice—a feeling that also promotes long-term ambassadorship.

Consider the exiting employees' former colleagues as complementary and confirmatory sources of information. After former employees have departed the organization, HR could openly follow up with their remaining colleagues to solicit various views on why the former employee left. "We also collect a lot of information from their peers afterward to confirm the reasons they told us they left," a Middle Eastern manufacturing HR manager shared. "Peers will tell you; all of them are open. We stop by and ask, 'Why did she go?'" If done publically and without rancor or innuendo, such an overture can build rapport by showing that the organization regrets losing valued employees and is seeking to truly understand their departures. Former colleagues are likely to talk openly about others' reasons for dissatisfaction, perhaps even attributing some of their own views to the former employee. "It is important to find other sources to validate issues that employees raise during their exit interviews," a European mining executive added. Seeking secondary sources of information may be particularly useful when trying to understand departing HI-POs.

Treat each retention conversation, and especially the EIS, is a significant developmental experience for the departing employee. Great organizations will use the EIS as a final developmental event for their employees. Reflection is the essential third phase of the Leadership Development Model, which includes preparation for a developmental experience, undergoing the experience, and then reflecting on that experience (Scott A. Snook, 2007). Preparation and reflection are the phases most often skipped by organizations, due to urgency of other events. A trait of great organizations is that they will rarely miss an opportunity to develop their people. Departing employees stand to gain the most from making sense of what they experienced throughout their time with that organization, and designing the

EIS to be a reflective experience will enable the departing employees to become better workers and leaders in the future. Employees who believe their organizations invest in them developmentally are more likely to act like ambassadors as well. A North American food and beverage retailer explains "I see the exit interview as kind of a mini-360 for that leader."

Think of the EIS as not just one, two, or three discrete events but rather the entire period after the employee announces their pending departure. This article has treated the EIS as the discrete capstone of series of greater exit conversations over time, but the experience of departure actually begins when the employee makes the decision to depart and continues beyond the last day of employment. Wise organizations will realize that employees have been considering leaving for some time prior to announcing they will leave and treat the entire last phase of an employees' service as consequential, in both the data-gathering sense and with an eye to commissioning a brand ambassador. "[The exit interview] helps peel back the onion, but there is a lot to lead up to a person's last day of work that shapes up to that," a global food and beverage executive so aptly shared.

Conclusion

To build on the useful yet inconclusive scholarship and business literatures about EIS, our field survey and interviews help shed light on how organizations can design thoughtful EIS programs. If employees are organizations' most important assets, establishing a thoughtful and developmental EIS program is almost all upside from economic, strategic, and moral perspectives. Remember the fundamentals: *Recognize that the exit interview is enabled by being the capstone event of a recurring series of feedback and retention conversations. Ensure the senior line leaders are ubiquitously involved throughout the EIS process. Customize the EIS program for the organization's specific culture and contexts. Set the conditions that promote honesty and forthrightness with all employees. Use the inputs-process-outputs model to inform decision making when designing the organization's EIS program.*

Our research, previous scholars, and best practices from the field show organizations that follow these rules of thumb can reduce unwanted turnover, catalyze a continuous source of ideas to improve their

organizations, and commission departing employees as ambassadors who promote the organization for a lifetime.

> *The exit interview reinforces the values of the organization. If it becomes part of your organization's DNA, it becomes hugely beneficial.*
>
> *-Global consumer products executive*

Chapter 3 Appendixes

The data used in this research were collected from five sources. Two of the sources were surveys that were given as part of two HBS Executive Education courses, and three of the sources were semi-structured and unstructured interviews. Specifically, 108 surveys were from participants in *Leading Professional Service Firms* (LPSF) course in March 2012, and 80 were surveys were from *Leading Change & Organizational Renewal* (LCOR) course, also in March 2012. Eleven interviews were conducted in May 2012, fourteen interviews were conducted in January 2013, and six interviews were conducted in September 2013.

Though all data sources investigated leaders' and employees' perceptions of EIS at their organizations, there were differences in the questions asked, and resulting differences in data received. The dependent variables (DVs) of *Some action taken* and *Specific action taken* were asked, and later analyzed, using data sources 1, 2, & 3. The DVs of *EIS data consolidated* and *EIS data regularly shared with line leaders* were asked, and later analyzed, using data source 3 only. Quotes were taken from open responses of data sources 3, 4, & 5. Control and demographic variables (such as *Industry*, *Geographic region*, and $Size_{employees}$) were asked, and later analyzed, from data sources 1, 2, 3, & 4.

Respondents may have skipped one, some, or many questions during their survey or interview. If skipped, the answer was not counted in the analyses. A summary of the data sources is in Appendix 1 below.

Appendix 1: Data sources

Data Source #	Date	N	Survey	Interview	Course	Empirical Data Line #s	Demographics?	Action taken asked (DV)?	Consolidate data asked (DV)?	Open responses asked?
1	Mar-12	108	Y	-	LPSF	1-108	108	108	-	108
2	Mar-12	80	Y	-	LCOR	109-188	80	80	-	80
3	May-12	11	-	Y	-	203-213	11	11	11	11
4	Jan-13	14	-	Y	-	189-202	14	-	-	14
5	Sep-13	6	-	Y	-	N/A	-	-	-	6
						Totals:	213	199	11	219

Appendix 2: Survey and interview questions

Data Sources #1 & #2
-If an employee chooses to voluntarily leave your firm, are there a set of standard procedures that are followed for this step?
-What, if any, are those standard procedures? Is there an "exit interview"? With whom? What is discussed?
-Could you describe a significant action that was taken as a result of the exit interviews?
(+ individual and organizational demographics)

Data Source #3
-Does your firm conduct exit interviews for any of your professional staff? Why or why not?
(if "no" to first question…)
- Does your firm do anything formal designed to achieve similar goals of organizational learning or giving voice and honor to the outgoing employee (right-seat rides, formal tie in to alumni communities)?
-Are you aware of any firms that conduct exit interviews and surveys?
(if "yes" to first question…)
-Is it mandatory or optional to conduct an exit interview and survey?
-Is it done anonymously (form or over a computer) or in person?
-Who conducts the interview?
-Which group of employees (first term, professional staff) do you interview?
-Where does it physically happen?
-When does it happen (in the period of their job transition)?
-What do they ask the departing employee and how?
-What are the benefits of the interviews?
-What are the costs/disadvantages of doing the interviews and surveys?
-How reliable and valid is the information you receive?
-Is the information recorded and shared by the organization? If so, how?
(for all…)
-What do you believe are the best practices of conducting exit interviews?
-What do you believe are pitfalls to avoid in conducting exit interviews?
-Are exit interviews worth the energy/costs required to put in them?
-What groups of employees should be mandated to receive exit interview (if any) and why (e.g. should we focus on high performers only if there are limited resources to conduct the exit interviews?
-Is there anything we missed or that you would like to add?
(+ individual and organizational demographics)

Data Source #4
-Why are you/others leaving your organization/firm?
(+ individual and organizational demographics)

Data Source #5
-open ended question about the EIS process

Appendix 3: *Some/specific action taken* summary statistics (N=211) [a]

Type	Variable	Obs	Mean	Std. Dev.	Min	Max
Dependent	Some action taken	169	0.47	0.50	0	1
Dependent	Specific action taken	169	0.35	0.48	0	1
Explanatory	EIS mandatory	209	0.79	0.41	0	1
Explanatory	EIS led by HR	169	0.67	0.47	0	1
Explanatory	EIS led by boss	169	0.18	0.38	0	1
Explanatory	EIS led by senior mentor (s.m.)	169	0.09	0.29	0	1
Explanatory	EIS led by boss or s.m.	161	0.25	0.43	0	1
Explanatory	EIS led by external consultant	169	0.01	0.11	0	1
Explanatory	EIS by questionnaire	169	0.04	0.20	0	1

[a] Two sets of two survey respondents were from the same organizations. Therefore we dropped the second respondent from each, so not as to double-count a particular company.

Appendix 4: *Some/specific action taken* correlation matrix (N=211)

Variable	Some action taken	Specific action taken	EIS mandatory	EIS led by HR	EIS led by boss	EIS led by senior mentor (s.m.)[a]	EIS led by boss or s.m.	EIS led by external consultant	EIS by questionnaire
Some action taken	1								
Specific action taken	0.74*	1							
EIS mandatory	0.10	0	1						
EIS led by HR	0.05	0	0.19*	1					
EIS led by boss	-0.01	0	0.06	-0.19*	1				
EIS led by senior mentor	0.12	0	-0.12	-0.17*	0.12*	1			
EIS led by boss or s.m.	0.10	0	-0.03	-0.27*	0.83*	0.55*	1		
EIS led by consultant	0.00	0	0.01	-0.15*	-0.05	-0.03	-0.06	1	
EIS by questionnaire	-0.07	0	0.03	-0.11	-0.02	-0.06	-0.05	-0.02	1

*$p \leq 0.10$

[a] senior mentor includes the employee's boss's boss or someone even higher in that organization

Appendix 5: *Some action taken* regression (by industry group)

	(1) All	(2) Professional Services	(3) IT & Telecom	(4) Other Industries
EIS mandatory	0.03	-0.02		
	(0.30)	(0.33)		
EIS led by HR	0.09	0.19	0.57***	-0.26*
	(0.10)	(0.16)	(0.16)	(0.14)
EIS led by boss	-0.01	0.14	0.43**	-0.43***
	(0.11)	(0.14)	(0.16)	(0.14)
EIS led by senior mentor	0.22	0.19	0.00	0.23
	(0.15)	(0.24)	(0.00)	(0.18)
EIS led by consultant	0.09	0.62***		-0.62***
	(0.38)	(0.15)		(0.13)
EIS by questionnaire	-0.12	-0.11	0.43**	-0.27
	(0.19)	(0.26)	(0.16)	(0.27)
Constant	0.39	0.40	0.00	0.62***
	(0.29)	(0.32)	(0.00)	(0.13)
Observations	148	74	18	56
R-squared	0.02	0.06	0.20	0.16

*p≤0.10, **p≤0.05, and ***p≤0.01
-Robust standard error point estimates are in parentheses below each OLS regression coefficient (β-value)

Appendix 6: *Specific action taken* regression (by industry group)

	(1) All	(2) Professional Services	(3) IT & Telecom	(4) Other Industries
EIS mandatory	0.50***	0.44***		
	(0.11)	(0.14)		
EIS led by HR	-0.06	0.01	0.43**	-0.29**
	(0.10)	(0.15)	(0.16)	(0.14)
EIS led by boss	-0.12	0.05	0.57***	-0.49***
	(0.11)	(0.16)	(0.16)	(0.11)
EIS led by senior mentor	0.13	0.08	-1.00***	0.31*
	(0.13)	(0.20)	(0.00)	(0.17)
EIS led by consultant	0.07	0.60***		-0.56***
	(0.37)	(0.14)		(0.13)
EIS by questionnaire	-0.21	-0.07	-0.43**	-0.17
	(0.17)	(0.31)	(0.16)	(0.29)
Constant	-0.07	-0.04	-0.00	0.56***
	(0.08)	(0.10)	(0.00)	(0.13)
Observations	148	74	18	56
R-squared	0.03	0.04	0.20	0.22

*p≤0.10, **p≤0.05, and ***p≤0.01
-Robust standard error point estimates are in parentheses below each OLS regression coefficient (β-value)

Appendix 7: *Some action taken* regression (by geography)

	(1) All	(5) Europe	(6) North America	(7) Middle East	(8) Africa	(9) Asia & Pacific	(10) Cent/S. America
EIS mandatory	0.03		-0.48*				
	(0.30)		(0.27)				
EIS led by HR	0.09	0.14	0.13	0.00	-1.00***	-0.05	0.80**
	(0.10)	(0.18)	(0.18)	(0.52)	(0.00)	(0.26)	(0.24)
EIS led by boss	-0.01	-0.24	0.36*	-0.40	-1.00***	0.34	1.00***
	(0.11)	(0.19)	(0.19)	(0.40)	(0.00)	(0.32)	(0.00)
EIS led by senior mentor	0.22	0.29	0.29	0.60		-0.74**	
	(0.15)	(0.31)	(0.27)	(0.40)		(0.26)	
EIS led by consultant	0.09		-0.23			0.58**	
	(0.38)		(0.17)			(0.25)	
EIS by questionnaire	-0.12		-0.15			0.63***	
	(0.19)		(0.27)			(0.17)	
Constant	0.39	0.49***	0.71**	0.60	1.00***	0.42	0.00
	(0.29)	(0.18)	(0.27)	(0.40)	(0.00)	(0.25)	(0.00)
Observations	148	53	54	6	6	21	7
R-squared	0.02	0.07	0.14	0.40	1.00	0.27	0.44

*p≤0.10, **p≤0.05, and ***p≤0.01
-Robust standard error point estimates are in parentheses below each OLS regression coefficient (β-value)

Appendix 8: *Specific action taken* regression (by geography)

	(1) All	(5) Europe	(6) North America	(7) Middle East	(8) Africa	(9) Asia & Pacific	(10) Cent/S. America
EIS mandatory	0.50***		0.58**				
	(0.11)		(0.25)				
EIS led by HR	-0.06	-0.01	0.04	-0.67*	-0.50	-0.18	0.60
	(0.10)	(0.18)	(0.17)	(0.21)	(0.50)	(0.25)	(0.29)
EIS led by boss	-0.12	-0.29	0.28	-0.60	-0.50	-0.21	1.00***
	(0.11)	(0.19)	(0.22)	(0.21)	(0.50)	(0.29)	(0.00)
EIS led by senior mentor	0.13	0.36	0.38	0.40		-0.21	
	(0.13)	(0.26)	(0.26)	(0.21)		(0.25)	
EIS led by consultant	0.07		-0.20			0.49*	
	(0.37)		(0.16)			(0.24)	
EIS by questionnaire	-0.21		-0.07			-0.33*	
	(0.17)		(0.27)			(0.17)	
Constant	-0.07	0.50***	-0.38	0.73*	0.50	0.51*	0.00
	(0.08)	(0.17)	(0.26)	(0.24)	(0.50)	(0.24)	(0.00)
Observations	148	53	54	6	6	21	7
R-squared	0.03	0.06	0.11	0.90	0.40	0.21	0.30

*p≤0.10, **p≤0.05, and ***p≤0.01
-Robust standard error point estimates are in parentheses below each OLS regression coefficient (β-value)

Appendix 9: *Some action taken* regression (by number of employees)

	(1)	(11)	(12)	(13)	(14)
	All	Under 100	100-1,000	1,000-10,000	10,000+
EIS mandatory	0.03		0.02		
	(0.30)		(0.32)		
EIS led by HR	0.09	-0.16	0.09	0.23	-0.00
	(0.10)	(0.23)	(0.16)	(0.27)	(0.00)
EIS led by boss	-0.01	0.27	0.04	-0.12	-0.27
	(0.11)	(0.25)	(0.16)	(0.29)	(0.16)
EIS led by senior mentor	0.22	0.30	0.22	0.63**	
	(0.15)	(0.22)	(0.26)	(0.25)	
EIS led by consultant	0.09			0.13	
	(0.38)			(0.46)	
EIS by questionnaire	-0.12	0.59***	-0.02		-0.27
	(0.19)	(0.18)	(0.40)		(0.16)
Constant	0.39	0.57**	0.39	0.37	0.27
	(0.29)	(0.22)	(0.32)	(0.25)	(0.16)
Observations	148	22	76	33	16
R-squared	0.02	0.18	0.01	0.11	0.10

*p≤0.10, **p≤0.05, and ***p≤0.01

-Robust standard error point estimates are in parentheses below each OLS regression coefficient (β-value)

Appendix 10: *Specific action taken* regression (by number of employees)

	(1)	(11)	(12)	(13)	(14)
	All	Under 100 Employees	100-1,000	1,000-10,000	10,000+
EIS mandatory	0.50***		0.48***		
	(0.11)		(0.16)		
EIS led by HR	-0.06	-0.05	-0.05	-0.10	0.00
	(0.10)	(0.23)	(0.16)	(0.24)	(.)
EIS led by boss	-0.12	-0.36	0.10	-0.36	-0.09
	(0.11)	(0.25)	(0.16)	(0.23)	(0.10)
EIS led by senior mentor	0.13	-0.01	0.16	0.49**	
	(0.13)	(0.25)	(0.22)	(0.23)	
EIS led by consultant	0.07			-0.01	
	(0.37)			(0.45)	
EIS by questionnaire	-0.21	0.45**	-0.40***		-0.09
	(0.17)	(0.19)	(0.10)		(0.10)
Constant	-0.07	0.60**	-0.08	0.51**	0.09
	(0.08)	(0.21)	(0.13)	(0.23)	(0.10)
Observations	148	22	76	33	16
R-squared	0.03	0.14	0.05	0.12	0.03

*p≤0.10, **p≤0.05, and ***p≤0.01

-Robust standard error point estimates are in parentheses below each OLS regression coefficient (β-value)

Appendix 11: *EIS data consolidated/shared* summary statistics (N=32)

Type	Variable	Obs	Mean	Std. Dev.	Min	Max
Dependent	EIS data consolidated	9	0.67	0.50	0	1
Dependent	EIS data shared with line leaders [a]	9	0.22	0.44	0	1
Explanatory	EIS mandatory	23	0.70	0.47	0	1
Explanatory	EIS led by HR	16	0.31	0.48	0	1
Explanatory	EIS led by boss	16	0.06	0.25	0	1
Explanatory	EIS led by senior mentor (s.m.)	16	0.00	0.00	0	0
Explanatory	EIS led by boss or s.m.	16	0.06	0.25	0	1
Explanatory	EIS led by consultant	16	0.00	0.00	0	0
Explanatory	EIS by questionnaire	16	0.06	0.25	0	1

[a] If the EIS data was regularly shared with line leaders in a structured way, this DV=1. If it wasn't, this DV=0.

Appendix 12: *EIS data consolidated/shared* correlation matrix (N=32)

Variable	EIS data consolidated	EIS data shared with line leaders	EIS mandatory	EIS led by HR	EIS led by boss	EIS led by boss or s.m.	EIS by questionnaire
EIS data consolidated	1						
EIS data shared with line leaders	0.38	1					
EIS mandatory	0.75*	0.29	1				
EIS led by HR	0.65	0.40	.	1			
EIS led by boss	-1	-0.26	.	-0.17	1		
EIS led by boss or s.m.	-1	-0.26	.	-0.17	1*	1	
EIS by questionnaire	0.17	-0.26	.	-0.17	-0.07	-0.07	1

*p≤0.10

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