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ARE MENTORS BENEFICIAL?: MENTORS' PERFORMANCE AND ATTRIBUTES AS PREDICTORS OF RETENTION FOR MARINE OFFICERS COMMISSIONED FROM NROTC PROGRAMS

by

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March 2021

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The Marine Corps' current manpower system focuses on producing quantity over quality and fails to encourage those it wants and needs to keep to increase the diversity and longevity of its officer corps. A renewed emphasis has been placed on understanding what factors may affect an officer's decision to remain serving. Literature suggests that a mentoring relationship may have a positive effect on retention. In this study, we first explore the predictive power of socio-demographic variables on retention, updating findings from previous studies. Multivariate analysis findings confirm the previous findings that married officers with dependent children are more likely to choose to retain throughout measured retention milestones. Furthermore, the U.S. Naval Academy (USNA) continues to show the highest retention rates among other commissioning sources. We then focus on the officers commissioned from a Naval Reserve Officer Training Corps (NROTC) program to examine how a mentor's (Marine Officer Instructor) performance and shared attributes with a mentee (midshipman) predict retention behavior for the mentee at the 5- and 7-year milestones. Our findings do not definitively indicate that a mentor's performance or having shared attributes with a mentee are significant predictive factors for a mentee's retention decisions, suggesting that additional work on the mentor-mentee relationship and its effect on retention is warranted.

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ABSTRACT

The Marine Corps' current manpower system focuses on producing quantity over quality and fails to encourage those it wants and needs to keep to increase the diversity and longevity of its officer corps. A renewed emphasis has been placed on understanding what factors may affect an officer's decision to remain serving. Literature suggests that a mentoring relationship may have a positive effect on retention. In this study, we first explore the predictive power of socio-demographic variables on retention, updating findings from previous studies. Multivariate analysis findings confirm the previous findings that married officers with dependent children are more likely to choose to retain throughout measured retention milestones. Furthermore, the U.S. Naval Academy (USNA) continues to show the highest retention rates among other commissioning sources. We then focus on the officers commissioned from a Naval Reserve Officer Training Corps (NROTC) program to examine how a mentor's (Marine Officer Instructor) performance and shared attributes with a mentee (midshipman) predict retention behavior for the mentee at the 5- and 7-year milestones. Our findings do not definitively indicate that a mentor's performance or having shared attributes with a mentee are significant predictive factors for a mentee's retention decisions, suggesting that additional work on the mentor-mentee relationship and its effect on retention is warranted.

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LIST OF ACRONYMS AND ABBREVIATIONS

1stLt	First Lieutenant
2ndLt	Second Lieutenant
Capt	Captain
CBO	Congressional Budget Officer
EAS	End of Active Service
FITREP	Fitness Report
FY	Fiscal Year
GRE	Graduate Record Examination
LEAD	Leadership, Education, and Development Program
LOGIT	Logistic (Regression)
MARADMIN	Marine Corps Administrative Message
MBS	Master Brief Sheet
MCC	Monitored Command Code
MCO	Marine Corps Order
MMOA	Manpower Management Officer Assignment
MOI	Marine Officer Instructor
MRO	Marine Reported On
NETC	Naval Education Training Command
NSTC	Naval Service Training Command
NPS	Naval Postgraduate School
NROTC	Naval Reserve Officer Training Corps
OCC	Officer Candidate's Course
OCS	Officer Candidate School
OR	Odds Ratio
OSA	Officer Selection Assistant
OSO	Officer Selection Officer
OST	Officer Selection Team
PES	Performance Evaluation System
PLC	Platoon Leader's Course
RO	Reviewing Officer

RS	Reporting Senior
RV	Relative Value
TBS	The Basic School
USMC	United States Marine Corps
USNA	United States Naval Academy

I. INTRODUCTION

The Marine Corps has long been plagued by exceptional officers that attrite part way through their careers, leaving a gap in talent and experience that is challenging to maintain in the active ranks. Due to imbalanced recruiting efforts and a shift in the demographics of the U.S. workforce, the gender and racial make-up of the Marine Corps is not reflective of the nation, and the gap left due to attrition further narrows the composition of the force. This gap might be reduced by leveraging a deeper understanding of the effect of mentoring on retention, and of whether similarities in gender and race of mentor and mentee have any bearing on retention. Studies have shown that certain demographic characteristics and commissioning sources are accurate predictors of retention in the military (Ergun, 2003; O'Brien, 2002). Further, both military and non-military studies on mentorship suggest that it can have positive impacts on career retention decisions of mentees (Lyle & Smith, 2014; Steinberg & Foley, 1999; Payne & Huffman, 2005; Viator & Scandura, 1991). Presently, the Marine Corps has both formal and informal mentorship programs in place throughout various points in an officer's career. In this thesis, we specifically focus on the relationship between a prospective Marine officer in the pipeline of the Naval Reserve Officer Training Corps (NROTC) commissioning program, and the 'seasoned' Marine officer who is in direct contact with, and responsible for the prospective officer. Using multivariate regressions, this thesis is the first of its kind to combine elements of demographics, commissioning source, and mentorship to search for predictors of retention decisions at different career milestones.

A. BACKGROUND

The Marine Corps is currently undergoing a change in its force design to better align itself with the evolving requirements of future operations. The 38th Commandant of the Marine Corps, General Berger, has stated in his planning guidance that, "everything starts and ends with the individual Marine" (United States Marine Corps [USMC], 2019). The current manpower system focuses on producing "quantity over quality," and fails to encourage those that it wants and needs to stay to increase the diversity and longevity of

its officer corps. As such, a renewed emphasis has been placed on recruiting and understanding what factors may affect an officer's decision to remain serving.

A commonality between all Marine Corps accession programs is the direct interaction of a prospective officer has with an active-duty Marine who serves as a mentor and facilitator through the recruitment, selection, and commissioning process. These active-duty Marines serve in billets at the different accession sources and hold one of the following billets: Officer Selection Officer (OSO) for the OCC or PLC programs, Marine Officer Instructor (MOI) for NROTC programs, or a Company Officer at the USNA. Marine officers selected to fill these billets are screened and selected through a board, convened at HQMC. The selection process considers their career performance, measured by Fitness Reports (FITREP) they have received, among other factors. Often, officers selected to fill mentor billets are high performers within the officer population, as talent attracts talent. These officer-mentors are charged with being ambassadors for the Marine Corps and often provide some of the only interaction prospective officers receive prior to their commissioning. The amount of time the officer-mentors interact with prospective Marine officers (mentees/protégés) differs by commissioning source, but ultimately serves the same purpose; to provide support to the mentee so they may be commissioned. Mentors may offer support to include serving as a role model, answering questions about the Marine Corps, providing advice, and conducting physical training events. The relationship between mentor and mentee is usually mutually terminated upon the mentee's commissioning.

Research on mentorship suggests that bonds between a mentor and protégé can have career effects, such as improved retention, increased job performance and satisfaction, as the protégé is provided with guidance, counseling, and opportunities from an experienced role model (Kram, 1983). The presence of a mentor does not guarantee these career effects, but studies have shown that various characteristics of a mentor may have more of a positive influence on these outcomes. Lyle and Smith (2014) find that a mentor with higher career performance has a greater impact on early promotion of their mentee. Additionally, studies by Blake-Beard et. al (2011) and Rockoff (2008) find that the role of

matching attributes between mentor and mentee positively impacts the mentee's career decisions and job performance.

B. PURPOSE

The purpose of this study is to determine how a mentor's career performance and shared attributes with a mentee may be predictors of retention decisions. This study initiates research on the role of mentorship on retention decisions for Marine Corps officers which can be expanded upon. The results of this study may be used by the Marine Corps to further examine the role of mentorship in its other accession sources. Then, by comparing findings across commissioning sources, the Marine Corps can strategically select officers for mentor billets and exploit pre-existing mentorship programs to decrease gaps in talent and experience by reducing attrition. Further, the methodology used in this thesis could also be applied to selecting officers to hold the billet of Staff Platoon Commander (SPC) at The Basic School (TBS), as SPCs have similar mentoring relationships with TBS students.

C. RESEARCH QUESTIONS

(1) What socio-demographic factors and commissioning programs affect an officer's retention?

- Do these predictive factors have a different effect on retention of an officer from a NROTC program?

(2) Does a mentor's career performance affect retention decisions of the mentee?

(3) Does having shared attributes between mentors and mentee serve as predictive factors for retention?

Multivariate analysis results indicate concurrence with previous retention studies in that those officers with a more family-oriented lifestyle (married with children) are more likely to choose to retain throughout measured retention milestones. Further, the USNA continues to have the highest retention rates among other commissioning sources. The findings from our mentorship models do not definitively indicate that a mentor's

performance or having shared attributes with a mentee are significant predictive factors for a mentee's retention decisions.

D. SCOPE AND LIMITATIONS

The scope of this thesis is a study of midshipmen in NROTC programs and the associated MOIs from 2000 through 2015. Though a handful of studies on mentorship at the commissioning source level exist, they have primarily been conducted at the U.S. Naval Academy rather than other accession sources. Additionally, most research that has been conducted on mentorship in the military has used surveys or in-depth interviews which may be subject to bias, thus there is a gap in the literature for data driven analysis. There are a few limitations of this study that should be noted: (1) measurement of a mentor's performance is based on available FITREP data and does not include any information on removed FITREPs from an officer's profile. (2) Officers serving in MOI roles typically have tours lasting 2–3 years, resulting in a limited and condensed timeframe for which to create and foster a mentorship relationship with NROTC midshipmen. (3) Due to the rotating nature of the MOI billet, a midshipman may have multiple mentors during their time in the NROTC program, some of whom may have a greater influence than others. Since we do not have information indicating which MOI had a larger impact on a given midshipmen, we look at the officers who held the MOI billet for the longest period, first mentor, and last mentor during the midshipman's time-period for our analysis. (4) The TFDW data file has some discrepancies in the coding of accession sources for officers. To capture as many 'protégés' as possible, we used the data received from NETC to determine accession source.

E. ORGANIZATION OF THE STUDY

This thesis is organized into six chapters. Chapters II and III provide background information and a literature review for understanding the impact of accession source and mentoring on retention. Chapter IV describes the data and variables used, discusses key descriptive statistics, and explains the methodology used for analysis. Chapter V details the results and findings of the analysis. Chapter VI provides conclusions and discusses recommendations for possible future research.

II. BACKGROUND

A. OVERVIEW

Marine Corps Recruiting Command (MCRC) maintains and regulates all accessions for the Marine Corps. There are distinct differences in the recruiting effort between officers and enlisted personnel. We focus on four accession sources (PLC, OCC, NROTC, and USNA) in which non-prior service unrestricted candidates can be commissioned as 2ndLts in the Marine Corps. PLC, OCC, and NROTC fall under the realm of MCRC, whose mission is to "Make Marines, Win Battles, and Return Quality Citizens to their communities" (MCRC, 2016). The USNA has a separate recruitment process navigated within their organization but assess Marine officers at the same standards produced by MCRC. While the recruitment of quality officers is paramount, additional mechanisms such as demographic information and mentorship factor into retention of the officers.

This chapter first provides detailed background information on each of the four main accession sources for Marine Corps officers, to include information on the role of the mentoring officer for each source. Those officers who hold billets of mentoring at each commissioning source (MOI, OSO, Company Officer) are individually selected for these billets by a selection board. A discussion of the selection board and process is also included. A key question in this thesis examines how the performance of officers who hold mentoring positions affect the retention decisions of those they mentor. A formal performance metric for Marine officers is conducted through the completion of a Fitness Report (FITREP), which will also be discussed. Finally, this chapter provides information on mentorship to include its functions, types, phases, and outcomes.

B. OFFICER CAREER PATHS

The path of a Marine Corps officer starts with their respective accession program, follow-on training post commissioning at TBS and MOS school, and with the bulk of their career in the fleet conducting MOS specific billets, secondary billets (B-billet) during

follow on tours or at a Professional Military Education (PME) resident school. The path for each officer is different but follows a similar construct.

1. After Commissioning

Upon commissioning every officer attends TBS no matter if the officer regardless of their future MOS. TBS is designed to "train and educate newly commissioned or appointed officers in the high standards of professional knowledge, esprit-de-corps, and leadership to prepare them for duty as company grade officers in the operating forces, with particular emphasis on the duties, responsibilities, and warfighting skills required of a rifle platoon commander" (HQMC, 2020a). All officers go through the same training to learn the skills required to adapt to any situation and billet they are put into. Before graduating, the officers will be appointed their MOS and at the conclusion of TBS, every Marine will go to their Primary MOS school before going to their assigned fleet unit.

2. First Fleet Tour

Following the completion of MOS school, Marine officers will report to their first fleet unit and stay there from 2–3 years. While there, Marines are exposed to different training events, deployments, and promotion to the rank of at least First Lieutenant (1stLt). The first fleet tour is normally a decision point for either remaining on active duty or executing their end of active service (EAS) up on completion of that tour. When an officer decides to remain on active duty, they must also be career designated. Marine Corps Order (MCO) 1001.65 states that "career designation is the process used to determine which company grade officers will be offered the opportunity for continued active service beyond their initial active service obligation" (HQMC, 2014) Career designation is for all 1stLts that have a minimum of 540 days in observed FITREPs and will be considered for the rank of Captain. The Marine Corps convenes a board every Fiscal Year for the selection of Marines able to remain on active duty and continue their Marine Corps career.

3. B-Billet

Once selected for career designation and completion of the first fleet tour, Marines will either receive orders to a second fleet tour, a B-billet, or resident PME. B-billets come

in a wide array of opportunities. According to Stolzenberg, "B-billets offer an opportunity for Marine officers to serve in a supporting unit for approximately three years. This allows the officer to "reset" after operating in a high-tempo environment with the FMF" (Stolzenberg, 2017). Marines serving on a B-billet will experience the Marine Corps in a different fashion and can be placed in billets such as recruiting duty, instructor staff billets, or in mentorship positions for example being a MOI. At the conclusion of this tour Marines are around the 5-, 7- year active-duty mark.

4. Second Fleet Tour

After serving a B-billet, it is typical to return to the fleet for a second tour. At this point in a Marine's career, they are a mid-level to senior Captain (Capt) and will be in a position of more responsibility. Near the end of the tour, a Marine will be reaching the 10-year time in service mark. As this is the halfway point to retirement if a Marine remains on active duty for a full 20 years, the decision of whether to stay in is critical after this third tour. This timeframe is also critical as the promotion board to Major (O-4) occurs around the nine-year mark with promotion taking place at approximately 10–11 years of commissioned service as shown in Figure 1.

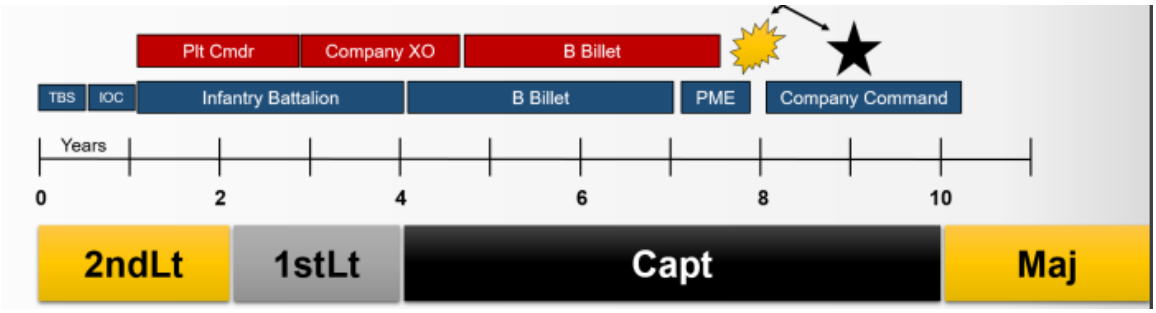

Figure 1. Officer Manpower Career Path. Source: HQMC (2020a).

C. MARINE CORPS ACCESSION PROGRAMS

The Marine Corps' contracting and accession goals are set yearly and accomplished by the Recruiting Command for both officer and enlisted missions. Non-prior service officer accessions, specifically, are recruited from the high school senior population along

with those students enrolled or graduated from accredited universities depending on the officer accession program. Each accession program is uniquely competitive in its selection process while focusing on the 'whole person concept' to ensure candidates are morally, physically, and mentally qualified (MCRC, 2015). As shown in Figure 2, the 2013 USMC Concepts & Programs publication, over 20,000 restricted and unrestricted officers were commissioned over the seven accession programs (USMC, 2013).

Type	Number	Percent
MECEP/ECP/MCP	174	10.4%
NROTC	228	13.6%
Officer Candidate Course	216	12.9%
Platoon Leader Course	566	33.9%
Military Academies	261	15.6%
Warrant Officer Program	216	12.9%
Other	10	0.6%
Total	**21,822**	**100%**

Figure 2. Active-Duty Officer Accessions in Fiscal Year 2013. Source: USMC (2013).

1. Naval Reserve Officer Training Corps

The NROTC program is conducted at civilian universities and colleges across the United States. The NROTC program is designed to "develop future officers mentally, morally, and physically, and to instill in them the highest ideals of duty, loyalty, and the core values of Honor, Courage, and Commitment in order to commission college graduates as naval officers" (Naval Service Training Command [NSTC], 2019). It allows for high school seniors and graduates to apply, screen, and be boarded with a Marine Corps Recruiting Station before selection into one of the NROTC units across the country. Selection is a competitive process and results in a scholarship to the selected school for up to four years. Minimum eligibility requirements are a U.S. citizen, no moral obligations or personal convictions, between 17–23 years of age, accepted for admission into university that has a participating NROTC unit, and within medical and physical standards (NSTC,

2019). During the application process the applicant is required to list five NROTC affiliated schools to which they will apply to and attend if selected for the scholarship; they can be in-state, out-of-state, or private universities (Naval Education Training Command [NETC], n.d.).

Each fiscal year, the allotment of scholarships changes and is based on the needs of the Marine Corps. As determined by a memorandum of agreement between the Chief of Naval Operations (CNO) and the Marine Corps, the maximum percentage of Marine Option Midshipman allowed for each NROTC commissioning class is 16 2/3 percent (O'Brien, 2002). On exception, college students who do not have a NROTC scholarship but wish to participate in the program may apply as a college programmer without any benefits. They can then apply for 2- or 3-year scholarships at their unit depending on availability. Figure 3 annotates a simple flow of a Midshipman's time in NROTC.

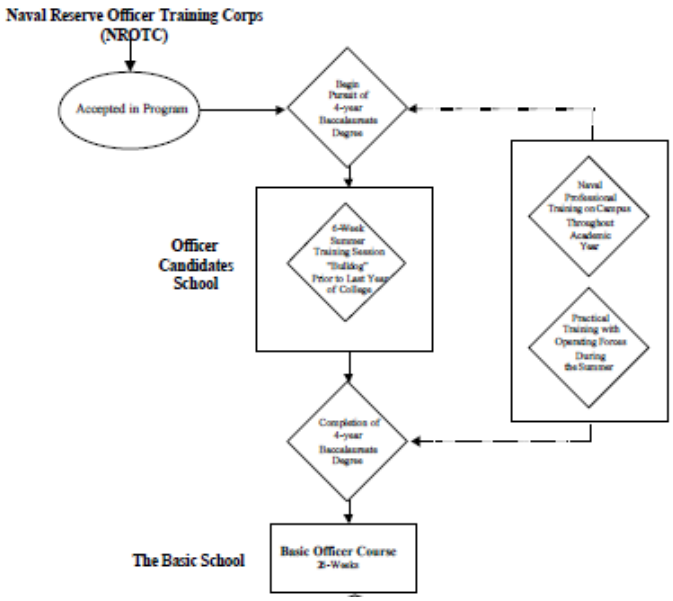

Figure 3. NROTC Accession Source Flow. Source: O'Brien (2002).

- Mentor's role/interaction

A Marine Officer Instructor is assigned to each NROTC unit that has a Marine contingent. Unlike OSOs, who recruit and then mentor their candidates through the entire

process, the MOI is not involved in the recruiting process of midshipman. The mentor role takes place upon arrival of the midshipman during their freshman year at the university or college. During the MOI's time in their billet, they are required to lead physical training events, conduct drill periods, teach Naval Science classes in the evolution of warfare and fundamentals of maneuver warfare, and support and augment summer training events (NSTC, 2019).

The nature of their role as a mentor is more defined than that of the other accession sources in that the MOI is the sole Marine officer in a small contingent of midshipman. The weekly and monthly requirements are rigid, while the time spent with the midshipman is of a greater proportion. The unit is enhanced by having enlisted Marines attached also working to commission as officers through the Marine Enlisted Commissioning Program (MECEP).

2. Platoon Leader's Class/Officer Candidate Course

The PLC accession program allows those students enrolled in an accredited undergraduate program, between their freshman and junior year, the opportunity to commission into the Marine Corps without interrupting their respective degree's curriculum. The Officer Selection Officer is responsible for recruiting and submitting the most qualified applicants to a board for approval and selection. Depending on when applicants apply to the program and are accepted, the candidates will either attend two 6-week one 10-week period of instruction at OCS in Quantico, VA. Additional requirements to be eligible include but not limited to the following: a U.S. Citizen, physically qualified, meet minimum academic requirements, and minimum military aptitude requirements (MCRC, 2016).

Similarly, the OCC commissioning program is designed for college seniors or college graduates. The course is designed as a single 10- week period of instruction in which those candidates that graduate can either accept or decline commission immediately upon OCS graduation. The same minimum service requirements and board procedures apply as they do with PLC. Both OCC and PLC can be contracted into one of four

programs: aviation, ground, law, and reserve. Upon commissioning, the officer must fulfill their minimum service obligation based on their contract, which can range from 4–10 years.

- Mentor's Role/Interaction

The OSO has personal involvement with their candidates to provide guidance and instruction within the PLC/OCC program and has a direct impact on their success at OCS and TBS. Their mission is to "commission fully trained officer candidates to second lieutenant" (MCRC, 2015). The OSO is part of an Officer Selection Station, a sub organization of MCRC, designed to find the future officers of the Marine Corps. As shown in Figure 4, the contact to contract chain, the OSO is vital to the process of a candidate becoming a 2ndLt from initial contact, administrative actions, and physical/mental preparation for OCS/TBS.

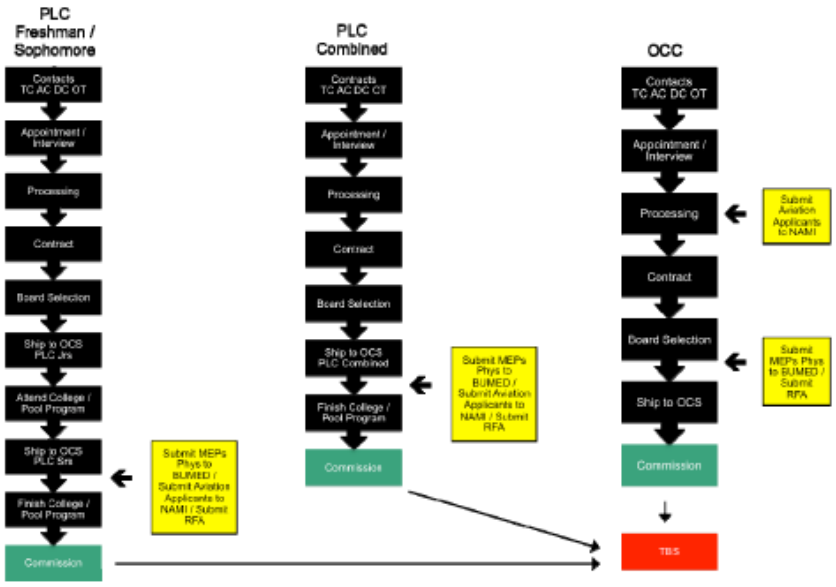

Figure 4. PLC/OCC Contact to Contract Chain. Source: MCRC (2015).

Each candidate applying to become a Marine Corps officer will become part of their respective Officer Selection Team's (OST) pool program, designed for the OSO to motivate and prepare them for OCS. The OST consists of the OSO and an enlisted marine assigned as the Officer Selection Assistant (OSA). While still recruiting new applicants,

the OSO has a responsibility to mentor the candidates and newly commissioned officers so they can be prepared to be successful in their follow-on training (MCRC, 2015). The candidate's development can be significantly impacted by the timing each candidate has with their OSO, which can vary from a few months up to seven years (MCRC, 2015).

The OSO has the same responsibilities to ensure the success and mentorship of both the PLC and OCC candidates. The most varying factor between the candidates is the time spent with the OSO due to them already being a college senior or graduate. Figure 2 denotes the process in which the OSO in involved in the commissioning process with the candidates for both PLC and OCC. Ultimately, as a Marine Officer serving as an OSO must have due diligence to maintain the motivation of their officer candidates, so they remain qualified in their commissioning process.

3. United States Naval Academy

The United States Naval Academy is a four-year undergraduate institution that prepares young adults to become a "professional officer of competence, character, and compassion in the U.S. Navy and Marine Corps. Naval Academy students are midshipmen on active duty in the U.S. Navy" (USNA, 2020). Midshipman will receive a Bachelor of Science degree with an emphasis in the fields of science, technology, engineering, mathematics, humanities, or social sciences.

Acceptance into the Naval Academy is the most competitive of the accession sources, with a 9% acceptance rate (Princeton Review, 2021). High school students are encouraged to apply as early as their junior year. To be eligible, the applicant must be: "a United States Citizen by 1 July of the year of entry, at least 17 years of age, must not have passed 23rd birthday on 1 July of the year of entry, unmarried, not pregnant with zero dependents, and have a valid Social Security Number" (USNA, 2020). Before an applicant can be accepted, they must receive an official nomination from one of the following: a U.S. Representative, a U.S. Senator, and the Vice President of the United States (USNA, 2020). Once accepted to the Naval Academy, students are not selected to the Marine Corps until later in their college career. Like NROTC, the number of Marines the USNA can

commission is 16 2/3 percent of the commissioning class (O'Brien, 2002). Figure 5 depicts a Midshipman's progression through the USNA.

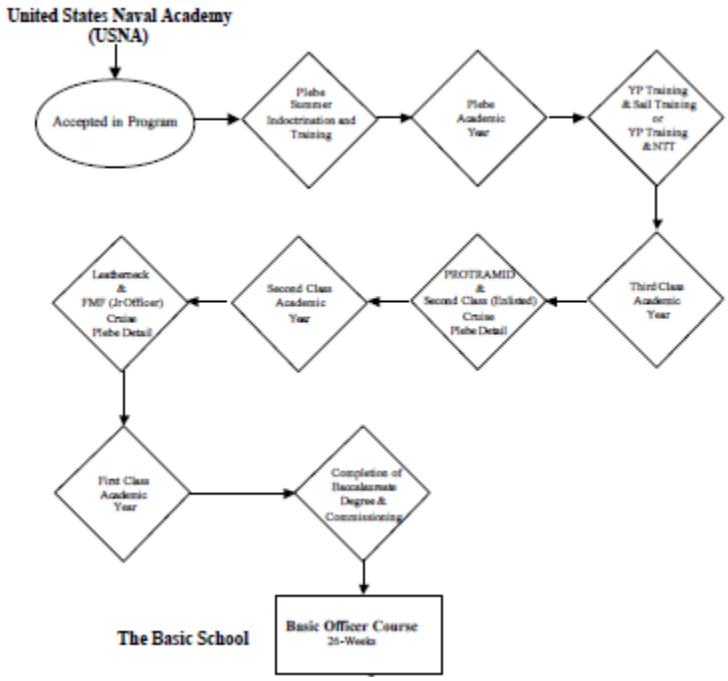

Figure 5. USNA Accession Source Flow. Source: O'Brien (2002)

- Mentor's role/interaction

The Company Officer role at the Naval Academy is the closest active-duty officer mentor that the students interact with during their duration of schooling. The USNA consists of 30 companies (Navy and Marine Corps Officers), each with a company officer and approximately 140 midshipmen. The Company Officer's role is to provide hands-on leadership every day (Cesari 2002). Cesari notes that "through the close contact Company Officers have with midshipmen, it is expected that frequent professional and personal counseling occurs, and midshipmen receive regular feedback on their academic, athletic and character development." Although the daily interaction between student and officer varies, professional and personal counseling are conducted to ensure outcome for midshipmen to commission is with the highest of standards as Naval and Marine Corps officers.

D. MENTOR SELECTION PROCESS

Each year the Marine Corps releases administrative messages to announce selection boards for the OSO, MOI, and USNA billets. The messages release pertinent information regarding minimum qualification standards and billets expected to be vacant the following year. While all these mentor billets are selected on a board, there are differences in the process and follow-on tour payback requirements and incentives.

1. Marine Officer Instructor

The MOI within a NROTC unit is selected from those Marines who apply for the billet and is open to all unrestricted company grade officers. The primary responsibilities of an MOI are to "directly mentor, develop, and shape the future officer corps and must therefore be of the highest caliber. Officers aspiring to NROTC duty must possess superlative leadership and academic qualities, be of sound moral character, and demonstrate superior physical fitness" (HQMC, 2020b).

2. Officer Selection Officer

The OSO is the primary recruiter and mentor for the PLC and OCC programs. The Marine Corps hand selects personnel to serve in a recruiting capacity. The board occurs in the fall and is convened by a staff from MMOA and MCRC to select officers (1stLt-Capt) to serve in one of three company grade officer billets at the Recruiting Station level: Executive Officer, Operations Officer, and Officer Selection Officer. Although all the billets have a hand in recruiting the future of the Marine Corps, the OSO is in a specific position in which they are on the front lines of finding the best and brightest to be Marine Corps officers. After successful completion of this billet, the officer does not incur any extra time on their obligated service. There is an incentive that the OSO will have "the option of assignment to Resident Career Level School or geographic location" following the time in the billet (HQMC, 2020c).

3. United States Naval Academy

The LEAD program was established in 1997 to enhance the impact that Company Officers have on the Midshipman (Gille, 2002). The USNA receives active-duty Marine

Officers between the ranks of Captain and Major and it is specifically designed for selected officers to earn a Graduate degree in leadership designed in conjunction with the Naval Postgraduate School. Upon graduation of the one-year academic programs, Marine will transition to a full-time position at the Naval Academy to serve as company officers.

The Marine Corps screens and selects the Company Grade officers to serve in the LEAD program based on an application process and board selection. As of FY21, the LEAD graduate degree transferred from George Washington University to a blended program with NPS. Due to this change, the Graduate Record Examination (GRE) requirement has been removed, shortening the list of requirements a Marine must fulfill when submitting their package (HQMC, 2020d). The screening process, like the other mentor billets, are highly competitive and only those who meet the intent of the program will have the opportunity to serve as a Company Officer at the USNA.

E. PERFORMANCE EVALUATION SYSTEM

1. Fitness Report

The Marine Corps utilizes a written Performance Evaluation System, governed by Marine Corps Order 1610.7A, to create fitness reports (FITREP) for all officers. This system was adopted in 1999 as a way of standardizing the way senior enlisted and officers are evaluated to try and correct any inflation concerns (Clemens, 2012). The system "provides the primary means for evaluating a Marine's performance to support the Commandant's efforts to select the best qualified personnel for promotion, career designation, retention, resident schooling, command, and duty assignments" (USMC, 2018). The FITREP itself is comprised of 11 sections, ranging from administrative information of the Marine Reported On (MRO) to the evaluation of the Marine by their senior officers. Sections D-H consists of 14 attributes, split into the following categories: "mission accomplishment, individual character, leadership, intellect and wisdom, and fulfillment of evaluation responsibilities" (HQMC, 2018). Markings are generated by the Reporting Senior and must be consistent with their marking philosophy. The marking philosophy provides the RS with a method to measure the Marines against the attributes and are unique to each RS. The attributes outlined in Appendix A combined with the RS'

marks, generate a report average which ultimately creates a high, low, and average report score for the RS' profile. It is the responsibility of the of the MRO to ensure accurate information and timely submission to their Reporting Senior, annotated in chapter 2 of the PES (HQMC, 2018).

2. Reporting Senior/Reviewing Officer

a. Reporting Senior

The reporting senior is the first commissioned officer in the reporting chain of command for the MRO. As described in the PES manual, the RS is in the best position to evaluate and observe the Marine's daily performance and character. The RS is also responsible for the tasking and supervision of the Marine. When the MRO and RS relationship begins, the RS must clearly convey the duties, responsibilities, and billet description to the MRO. This is not meant to be only conveyed a single time, but consistently throughout the reporting period. The RS should ensure the MRO is receiving feedback on their performance as the FITREP is not a counseling tool for the RS to the MRO (HQMC, 2018).

Once the reporting period has concluded, the RS will accurately complete sections A-I on the FITREP, ensuring appropriate marks have been annotated along with a word picture describing the MRO's performance before forwarding to the Reviewing Officer.

b. Reviewing Officer

The reviewing officer is the first commissioned officer above the RO in the reporting chain of command. They serve as a crucial link to "provide the experienced leadership, supervision, and detached point of view necessary to ensure consistent, accurate, and unbiased evaluations. ROs ensure adherence to policy and, as the last officer/ supervisor in the normal reporting chain, are responsible for all subordinate performance evaluation activities" (HQMC, 2018). The RO's main function on the FITREP is section K. This section allows them to concur or not concur with the RS' assessment as well as provides the RO with a section to include narrative comments on the MRO before

forwarding the FITREP for final submission and "provides an overall relative assessment, with an intended distribution shaped like a 'Christmas tree'" (Clemens, 2012).

3. Master Brief Sheet

The master brief sheet is a ready reference tool divided into two sections that summarizes the Marine's current administration information and the evaluation data throughout their career. The FITREP report listing creates a comprehensive list in order from oldest to most recent with pertinent information taken from the 11 sections of each report to include the markings for each attribute the RS evaluated the MRO on (HQMC, 2018). The MBS then generated relative values (RV) for each FITREP at the time the FITREP is process and generates a cumulative RV. This allows an officer to identify where they fall out in their RS' profile over time. Appendix B and C show how these sections are seen in the MBS.

F. MENTORSHIP

Increasingly over the past decade, organizations are starting to look beyond their bottom-lines, realizing that investing more in their employees will have much more of an impact on their longevity. This is no different for the U.S. military, and specifically the Marine Corps, which relies on the retention decisions an all-volunteer force after their first contract commitment expires. Mentorship is one of many tactics and methods used to invest in personnel to foster career success and thus entice retention (Kram, 1983; Ragins & Cotton, 1999, Allen et. al., 2004). The concept of mentorship has been studied for decades, "across organizations, settings, and research designs" with benefits reported by mentors, protégés, and organizations alike (Johnson, 2010). Gradually, more organizations, to include the military, seek to capture the benefits of mentorship. Before investigating mentorship's potential role in affecting Marine Corps retention decisions, it is important to first understand it conceptually and examine its application in the Marine Corps.

1. Defining Mentorship

The concept of mentorship is believed to have origins in early Greek mythology, first captured in Homer's *Iliad* and *Odyssey*, when Odysseus departs for battle and entrusts

his friend 'Mentor' to look after his son, Telemachus. On his quest to find his father, Telemachus is joined by Mentor, who provides advisement during difficult situations, teaches him how to think independently, and sets an example for displaying strong character, thus setting the stage for the role of a mentor on a protégé (Osborne et al., 1999). Additional interest in mentorship was initiated by Levinson and colleagues in the late 70s, when they published *Seasons of a Man's Life*, where they described the mentor as, a transitional figure, who represents a mixture of parent and peer, that takes on the role of teacher, guide, host, critic, and sponsor (Levinson et. al., 1978).

Mentorship takes on myriad of definitions depending on the situation and individuals involved. Generally, mentorship can be broadly understood as, some type of relationship, developed overtime, in which a more experienced person assists a less experienced person, usually in the same organization (Kram, 1983, Noe, 1988). The types of roles a mentor may assume range from being a supporter, advisor, assessor, to one who develops skills, knowledge, and talent. There seems to be no black-and-white answer for what mentorship is, but consensus says that it falls on a continuum and changes over time (Johnson, 2010).

2. Mentoring Functions (Career and Psychosocial)

Despite ambiguity in defining mentorship, those who take on mentor roles are generally thought to provide two categories of functions or behaviors for their protégés: career advancement and psychosocial (Kram, 1983). Those career-related functions may include coaching, protection, exposure and visibility, sponsorship, and assigning challenging work. The goal of the career advancement function is that the protégé gains exposure to the organization, seeks out, and prepares for advancement opportunities (Kram, 1983). In the Marine Corps, career-related functions provided by a mentor can occur in myriad of ways. It may include bringing a mentee to a certain meeting, whereby they may gain exposure to people, ideas, and situations beyond their realm. Or the mentee may be provided with an opportunity to deploy, which will gain them notoriety within the community, as they will receive a performance ribbon to wear on their uniform.

In contrast, psychosocial functions are typically more interpersonal in nature and include behaviors such as role modeling, acceptance and confirmation, counseling, and friendship behavior (Kram, 1983). By providing these functions, the mentor enables the protégé to "enhance a sense of competence, clarity of identity, and effectiveness in a professional role." (Kram, 1983). It is noted that the extent to which mentors provide one or both functions can vary considerably and are often looked at on a scale (Ragins & Cotton, 1999). In the Marine Corps, such psychosocial mentoring functions may manifest in the form of a senior officer who the mentee views as a role model for their stoic or pragmatic handling of a problem. Alternately, because the career path of a Marine is relatively similar, a more senior officer is well and uniquely positioned to provide counseling and advice to a more junior counterpart who may be struggling to handle a situation.

3. Mentoring Relationships (Formal vs. Informal)

Beyond mentors providing career development and/or psychosocial functions for the protégé, the mentorship relationship is usually classified in one of two ways; formal or informal. Each of these classifications may differ in the way they are initiated, structured, and what processes they use which may impact the career and psychosocial functions provided by the mentor, thus potentially affecting career outcomes for the protégé (Ragins & Cotton, 1999).

The initiation of an informal mentorship usually starts with the mutual identification of needs by both mentor and protégé; whereby the mentor aims to choose a protégé who may be a younger version of themselves, and the protégé selects someone they believe to be a good role model (Levinson et. al., 1978; Kram, 1983). Each party generally enjoys working with/being around the other, and the relationship may have aspects that parallel that of a parent/child bond. Conversely, a formal mentoring relationship is usually assigned by the organization based on previously identified criteria, whereby the mentor and protégé typically do not meet until the match has been made (Ragins & Cotton, 1999). Initially, there is little to no interpersonal comfort between the two parties, though it may develop throughout the relationship (Ragins & Cotton, 1999).

According to Ragins & Cotton (1999), in terms of structure, informal and formal mentorships "differ in duration, goals, and levels of commitment" from both the mentor and mentee (Ragins & Cotton, 1999). Informal relationships usually last between 3–6 years, where the mentor and protégé meet at desired times. Formal relationships are typically designed to be active for a much shorter period; six months to a year (Kram, 1985). With formal relationships being established for a set time period, there are normally predetermined goals the mentor and protégé are working toward whereas, the goals of informal relationships typically evolve over time and the relationship will progress to accommodate them (Ragins & Cotton, 1999). In concert with the different types of goals each relationship achieves is the level of commitment by each party. In formal relationships, mentors and protégés are involved and meet enough to satisfy the specified goals, which usually relate to the current position the protégé holds. In contrast, "informal relationships are more focused on the long-term career development" of the protégé both professionally and personally (Ragins & Cotton, 1999).

Ragins and Cotton (1999) also assert that once the mentoring relationship is established, there are various processes that differ by type of relationship which can impact how mentoring functions are provided. With the assignment of mentors in formal relationships, they may be less motivated to be a mentor than those in informal relationships. Formal mentors may agree to the relationship to be a 'good citizen' or to elevate their own careers, thus having less investment in how their protégé develops. Therefore, formal mentors may have less incentive to provide career and psychosocial functions to their protégé as compared to their informal mentor counterparts. Second, formal mentors may "have less effective communication and coaching skills" toward protégés, despite how they are viewed by mentoring program coordinators (Kram, 1985). Protégés typically choose a mentor who they believe to be a strong communicator with other characteristics they seek to emulate. When a protégé and mentor are ill-matched, the relationship may be less effective for both parties. Third, many formal mentoring programs seek to match parties from different departments/functions of the organization to avoid accusations of favoritism, though this may prevent some actions associated with mentoring, such as providing opportunities, visibility, and protection. Additionally, when a mentor and mentee are not part of the same department/ function, their career paths may have different trajectories which could prevent the mentor

from providing career counseling that would be relevant and impactful for specific goals of the mentee (Ragins & Cotton, 1999). Informal mentors are sought after by protégés as someone to emulate who is in the same career path and can effectively provide a range of mentoring functions (Ragins & Cotton, 1999).

While the Marine Corps does not have an established formal mentoring program for its officers, it defines officer-ship as being a leader, coach, mentor, and teacher to all. Thus, mentorship in the Marine Corps also differs in its initiation, structure, and processes, as previously highlighted by Ragins and Cotton (1999). As an officer gains rank, they are privy to holding billets with oversight and influence over larger populations. Commanding Officers, formally assigned to various units, have the distinct opportunity of having junior officers work directly for them to whom they can provide formal mentorship. The initiation of this relationship is not chosen by either mentor or mentee, as both are assigned to the unit without their control. Conversely, many informal mentoring relationships in the Marine Corps are formed following a working relationship or formal interaction and are continued based on the mentor providing psychosocial functions. Similar to what Ragins and Cotton (1999) asserts, parties to an informal mentoring relationship in the Marine Corps are more motivated and last longer in duration than those formally assigned, who may conduct mentoring activities out of necessity of the job. Additionally, informal mentorships in the Marine Corps are often conducted between individuals who do not work together, although may have in the past, and thus have little to no worries about favoritism. Whereas those in formal mentoring situations typically work in the same unit, in which case the mentor must be conscious of perceived bias, and as a result, may choose to scale back on providing some mentoring functions.

4. Mentorship Phases

Mentorship relationships have been found to develop over time, going through four predictable phases that may influence which career and psychosocial functions are provided (Kram, 1983). The first phase, initiation, occurs in the first 6–12 months and takes place as result of either a protégé admiring and respecting the mentor's competence or "capacity to provide support and guidance" or the mentor identifies the protégé as being someone worthy of coaching or guidance. The establishment of this relationship sets in motion positive

expectations and "provides the foundation for its movement to a new phase." (Kram, 1983; Oakes, 2005). Lasting from 2–5 years, the cultivation phase tests the expectations set forth in the first phase, as the mentor and protégé discover each other's value. This phase is where career and psychosocial functions area optimized, with career functions usually evolving first, forming an "interpersonal bond" from which the aspects of psychosocial functions emerge (Kram, 1983). The third phase, separation, occurs as the protégé gains "independence and autonomy" from the mentor and leads to a reevaluation of the relationship by both parties (Kram, 1983). Separation can occur because of several factors such as the protégé getting promoted or the mentor retiring. If separation is imposed too early in the relationship, the protégé may feel "abandoned and unprepared to meet new challenges." However, this phase is important to the protégé's development as it allows them to demonstrate their abilities without relying on the mentor's support. This phase concludes when both parties have come to the realization that the dynamic of the relationship has changed and is no longer needed in its original form. The final phase is that of redefinition, whereby communication between mentor and protégé becomes more informal and less often, looking more like that of a friendship (Kram, 1983).

While mentoring relationships in the Marine Corps follow the phases outlined by Kram (1983), the timing of them differs by type of relationship. It can be posited that informal relationships more closely align with the timeline suggested by Kram (1983), typically lasting for several years, as both mentor and mentee are assigned to different billets and units throughout their respective careers. However, those individuals in formal mentorships, as mentioned earlier, are usually part of the same unit and thus conduct all four phases of mentorship during their assigned time at the common unit, which may be from 1–3 years. The Marine Corps is a relatively small organization when compared to its sister services, and it is likely that officers will encounter one another at a later point in their careers, which is how many informal mentoring relationships are thus initiated.

5. Mentorship Outcomes

A common misconception about a mentoring relationship is that it only serves to benefit the protégé, but the mentor and organization can also be beneficiaries. These benefits

are typically classified into four different categories: career advancement, networking, professional development, and personal identity (Kram, 1985; Oakes, 2005). Each category can also be looked at through a subjectivity lens, whereby benefits can be either tangible or intangible (Allen et al., 2004).

a. Protégé

In their 1987 study, Wright and Wright presented how protégés benefit from each of the four categories. First, protégés may experience career advancement resulting from having a mentor. By teaching the protégé about technical aspects of their job, the protégé will advance their knowledge which could set them up better for promotion or other opportunities. Additionally, the mentor can help the protégé clearly define their career goals and then work with them to develop a path to achieving them. Finally, because a mentor is typically senior to the mentee in the organization, they can promote the mentee's abilities and/or serve as a protector, defending them if other's questions the mentee's abilities or attributes (Wright & Wright, 1987).

Networking is a second area of benefit identified by Wright and Wright (1987). Building on the research showing that productivity in the workplace has been correlated with the number of colleagues one has, Wright and Wright identified that mentors can help a protégé build their professional network by introducing them to important people in the organization and allowing them to attend meetings to increase their visibility in the workplace. Further, mentors can include their protégés in "intellectual discussions with peers and treat them as equals" as a means of having them engage and share their ideas with people they may not normally have access to.

Professional development is a third benefit received by protégés from a mentoring relationship (Wright & Wright, 1987). Beyond career advancement benefits, mentors can help protégés 'learn the ropes' and navigate unwritten rules that may exist in a profession. Additionally, mentees, through discussions and various experiences, can develop a larger sense of direction and long-term goals for their professional lives. Much of these professional development benefits can result from the career functions of mentoring, as described by Kram (1983).

Finally, Wright and Wright (1987) identified the establishment of a personal identity or self-image as a protégé benefit. A mentor can provide positive reinforcement through confirmation and acceptance for a protégé's actions, which can serve to increase their self-confidence. Mentors also can provide critical feedback to their protégé, teaching them how to accept constructive criticism. Through psychosocial functions of mentoring, mentors provide protégés with emotional support and counseling, that can help with work or personal issues (Kram, 1980). Mentors also serve as role models in both their professional and personal conduct, which a protégé observes and then may integrate into their own behavior. By emulating someone they respect, a mentee develops additional confidence in themselves.

The benefits of career advancement, networking, professional development, and establishment of a personal identity resulting from a mentoring relationship, as described by Wright and Wright (1987) are also applicable to a mentee in the Marine Corps. In an already small and highly interconnected organization, any opportunity or encouragement a junior officer receives resulting from their mentor's involvement is likely to have positive implications, like those described above.

b. Mentor

Though not normally seen as a recipient of benefits from a mentoring relationship, mentors also can gain a lot from mentorship. While protégés receive guidance for their career development, they in turn provide rejuvenation to their mentors' careers in the form of new ideas, attitudes, and enthusiasm (Wright & Wright, 1987). Additionally, for mentors who serve as a supervisor or boss for their protégé, the mentorship relationship can also help build trust between the two, allowing the mentor to feel more comfortable delegating tasks, ultimately making their workload more manageable (Dreher & Ash, 1990).

Another benefit for the mentor can be recognized through networking; as mentors expose their "active and productive" protégés to more people, the mentor's reputation can improve as they bring credit upon themselves (Wright & Wright, 1987; Oakes, 2005). A mentor may also gain notoriety among their peers by developing their protégé, which is also seen as demonstrating their leadership. Furthermore, mentors can extend their "collegial network" through their protégé's connections and relationships.

It is also common for mentors to derive a sense of pride and professional accomplishment when assisting the development of a protégé. Being able to see the fruit of their labor and being able to take some credit for both the personal and professional development of their mentee can be one of the most rewarding experiences, akin to parenting. A mentoring relationship also serves as an outlet for a mentor to pass on their knowledge, skills, and experience which is a way of having a lasting impact on an organization (Wright & Wright, 1987).

Officers join the Marine Corps for a multitude of reasons, but often choose to stay out of pride for their accomplishments and direct impact they have on others. Having the opportunity to be a mentor can have resounding impacts for a senior officer's career, as they are able to watch their protégés succeed in areas where they once struggled. While there is no tangible award or recognition given to those who mentor, the intrinsic value behind watching a mentee flourish is worth more than any acknowledgment, especially for such highly prideful individuals as Marines.

c. Organization

While fostering a positive mentoring relationship has obvious benefits to both mentor and protégé, another invested stakeholder is the organization. Mentoring outcomes of job satisfaction, job performance, and retention not only serve to benefit the organization on an individual level, but they also play a role in the overall climate, culture, and productivity of an institution (Wilson & Elman, 1990).

Wilson and Elman (1990) discussed numerous ways in which a mentoring relationship can benefit and be vital to the success and effectiveness of the organization. Mentors assist in relaying the culture, values, and expectations of the organization to the mentor by being a credible and trustworthy source. This provides a company with an additional means of communicating and reinforcing or readjusting its preferred organizational culture.

Mentors also have a unique glimpse into the more junior levels of an organization. Through communication with their protégé, mentors serve as 'deep sensors' of moods, attitudes, etc., and can be mechanism to pass on any early warning signs to upper management

(Wilson & Elman, 1990). Thus, allowing the organization to get in front of any issues before they are formally brought up. This communication between mentor and protégé can also be used to explain confusing or controversial organizational decisions, putting them into perspective for the protégé so they can gain an understanding of the larger picture instead of letting frustration manifest.

A final benefit of mentoring to the organization described by Wilson and Elman (1990) was that of identifying "fast trackers." These are junior personnel who are deemed to be gifted for one reason or another though may lack the confidence in or opportunities to demonstrate their skills. Mentors can help foster talents within these protégés for with the organization will reap the benefits.

The Marine Corps is an organization with a distinct culture that is steeped in tradition and has a modus operandi that is dissimilar to many civilian organizations. The role of a mentor not only serves as someone who can explain these facets to a junior officer, but who plays a critical role in passing on traditions from generation to generation. While these traditions are important to the identity of the Marine Corps, so is incorporating ideas from younger cohorts to help the organization stay relevant in the future. Like Wilson and Elman (1990) point out, mentors in the Marine Corps are uniquely positioned to interact with junior officers and often have the authority to implement suggested changes for the betterment of the organization. Further, those formal mentors serving in a capacity to conduct performance evaluations (FITREPs) on their mentees, can highlight these individuals as "fast trackers" by recommending them for accelerated promotion. This designation is reserved for those officers who are, "eminently capable of immediately assuming the responsibilities of the next higher grade" and may tremendously benefit the Marine Corps by being provided further opportunities to develop their talents (USMC, 2018).

G. SUMMARY

A prospective Marine officer starts their career by attending one of the accession programs where they are mentored by a board selected, experienced officer. Although each program is unique, differing in length and structure, this point in a prospective officer's career may influence their decision to stay in the Marine Corps for years to come.

Mentorship has long been associated with positive career outcomes such as job performance and satisfaction and retention. (Kram, 1983; Ragins & Cotton, 1999) It is comprised of career and psychosocial functions which each play different roles in assisting a mentee throughout their endeavors. While formal mentoring is the structure that is easiest to measure, informal mentoring relationships are characterized by more motivation by participants due to mutual desire to participate, focus on long-term goals, and often an interpersonal bond that may extend beyond the workplace. Despite differences in functions, structure, and outcomes in mentorship relationships, they all roughly follow the same basic phases of initiation, cultivation, separation, and redefinition, although durations may differ.

While there is no formal mentoring program for officers in the Marine Corps, mentorship still occurs in both informal and formal capacities. Informal mentorship exists but is often not spoken about and junior officers rely on senior officers who they have usually worked with in some capacity to provide psychosocial functions. Formal mentorship, however, is a little more prevalent, in that senior officers in roles of authority provide both career and psychosocial functions to those officers who are subordinate to them. These functions range from providing leadership or deployment opportunities or guiding a mentee through how to handle a difficult situation. The phases of mentorship apply to relationships in the Marine Corps but are arguably sped up to align with the rotation schedule of billets more closely.

The next chapter presents previous and relevant studies that help shape the framework for the analysis of this thesis. By examining what factors have previously been explored that serve as predictors of retention, we can expand the research with more updated data. Furthermore, studies on the role of mentorship on retention outcomes and its prevalence in the military provide us with a foundation from which to empirically explore how mentorship at early stages in a new officer's career may be related to career retention.

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III. LITERATURE REVIEW

A. OVERVIEW

Research efforts that study officer retention are not new and have previously focused on demographic variables and accession sources as predictors. These studies have examined officer populations ranging from all service branches and have varying milestones for retention. In this chapter, we provide a summary of some key studies on this subject area to build a foundation for our analysis and specify our multivariate models.

Mentorship as a topic has been studied considerably since the 1980s with benefits for organizations, protégés, and mentors found in myriad ways. However, few studies have specifically analyzed mentorship as it relates to the military, and its potential benefits on desired career outcomes such as retention. In this chapter we also review mentorship literature and specific case studies in both civilian and military career fields. Recent studies on mentorship in the military at the accession source level have used qualitative methods to examine its prevalence and potential impact on future outcomes but were not able to quantify these outcomes due to lack of data (Oakes, 2005; Johnson, 2010). The only study to examine how a military mentor's performance affects career outcomes for protégés was conducted on Army officers, using predetermined measures of performance (Steinberg & Foley, 1999). This thesis builds on retention and mentorship literature as it pertains to the differences among accession sources for Marine Corps Officers.

B. COMMISSIONING SOURCE AND RETENTION

The U.S. military has a promotion system in which advancement occurs from within the organization, where the only way to make it to a higher rank is to be retained until the point of selection to that next rank. At this point an officer can decide whether to stay in or get out. Therefore, the military is only able to grow in experience when a retention board chooses to retain someone and when that person chooses to stay in. Though there is no exact science to determining whether a military member will choose to retain, given the opportunity, many studies have attempted to determine predictors.

Beyond looking at demographic data of an individual considered for retention, studies over many decades indicate that an officer's commissioning source can be indicative of how long they will stay (Ergun, 2003; Asch et al., 2012; Smith, 1990; Parcell, 2001; Lehner, 2008). Differences in the studies occur as researchers having varying scopes of the military (typically by service branch or rank), look at different retention milestones, or examine different numbers of commissioning sources. Many of these studies define retention milestones at different points in an officer's career, with some studies examining trends across multiple milestones. But at a minimum, the majority look at the 10-year mark as a milestone, as this is a point in which nearly all officers have completed the initial obligation from their first contract term, with some even on their third tour (Smith, 1990; Ergun, 2003; Lehner, 2008). Despite these studies examining varying types of commissioning sources across different service branches and retention milestones, the overwhelming findings are that commissioning from a service academy, such as the United States Naval Academy, results in longer retention rates when compared to Officer Candidate School and NROTC programs (Ergun, 2003; Asch et al., 2012; Smith, 1990; Parcell, 2001; Lehner, 2008).

The literature shows that commissioning source plays a role in predicting retention for officers, but this could result from one of the many differences between accession sources. The role of mentorship at the point of entry for a military officer, we believe, is a mechanism that affects the role of commissioning source on retention. Our study seeks to expand on the military retention literature by examining the effect of mentorship at the commissioning source on different retention milestones.

C. MENTORSHIP

1. Mentorship Functions and Retention

Retention of employees as a desired outcome by an organization is not influenced by one single factor, but instead is affected by several factors such as compensation, training & development, promotion opportunities, job security, work environment, and overall culture. One of the many mechanisms that can affect these factors is the role of mentorship. Thus, mentorship can affect employee and organizational outcomes of

retention, job satisfaction, and job performance. Kram (1983) explained that mentorship falls into two distinct categories of functions: career or psychosocial. Research has shown that each of these functions have different prediction ability on outcomes for the protégé (Kram, 1983; Ragins & Cotton, 1999; Allen et al., 2004, Ragins & Kram, 2008).

Career functions include behaviors that assist protégés in learning the ins and outs of an organization and preparing them for advancement (Kram, 1983). According to Kram (1983), some of these behaviors include coaching, protection, exposure & visibility, and providing challenging work. Through these behaviors the protégé is assisted with challenging situations, provided a more experienced viewpoint, provided, and introduced to new opportunities, and have the chance to grow through the completion of meaningful work (Kram, 1983). Presence of the career function in a mentorship relationship has been found to be indicative of objective outcomes in the form of compensation improvements and promotion for the protégé (Kram, 1983).

Psychosocial functions include behaviors that "enhance the protégé's professional and personal growth, identity, self-worth, and self-efficacy" (Ragins & Kram, 2008). Some of these behaviors include counseling, friendship, and serving as a role model. Through the receipt of these actions, the protégé builds confidence and competence, receives emotional support, and has an example of conduct and success to emulate (Kram, 1983). "Psychosocial functions have been found to have a stronger relationship with a protégé's satisfaction with the relationship" (Ragins & Kram, 2008).

Within the military, mentors, especially those at the accession source level can provide both career and psychosocial mentoring functions to the prospective officers (mentees). The mentors can create situations to challenge the mentee and then coach them through their completion so the mentee can gain familiarity and confidence. Additionally, if a mentee proves themselves as a high performer, they are more likely to be discussed by the mentor in circles of influence, thus gaining notoriety and exposure for the mentee. In terms of psychosocial functions, mentors serve as role models for the Marine Corps through their actions and projection of their experience and can portray a path that a mentee wants to emulate. Further, mentors are in place to help bridge the gap for the mentee

moving from the civilian world into the military, and thus can provide counseling and comfort through challenges the mentee may face.

Our study uses career and psychosocial functions of mentorship as a means of categorizing the relationship between the military officer mentor (MOI, OSO, Company Officer) and the perspective officer (mentee) and gain an understanding of how these functions are utilized by the mentor to affect retention outcomes. While we did not study these functions specifically, their understanding is an important element in the fundamentals of this thesis.

2. Mentorship and Retention

a. Studies by Payne and Huffman (2005) and Viator and Scandura (1991)

While there have been numerous studies that have identified a link between mentorship and retention outcomes (turnover behavior, career intentions), among other behaviors, few have studied this connection in detail. One of the first studies to do so was conducted by Viator and Scandura (1991), as they examined the role of mentorship in large public accounting firms in the U.S.. Payne and Huffman (2005) conducted a separate study where they examine relationships between mentoring, organizational commitment, and turnover behavior in officers in the U.S. Army.

Each of these studies gathered data by means of using a mail in survey of their desired populations, asking questions about the number of mentors an individual had, characteristics of that mentor, as well as different types of mentoring support that was provided, and questions regarding their future career intentions (Viator & Scandura, 1991; Payne & Huffman, 2005).

Viator and Scandura (1991) hypothesized that there would be a positive association between mentoring and retention, and that certain mentoring activities have a stronger association. They also examined whether differences between these connections differed by gender or level of organization the employee was in (Viator & Scandura, 1991). Payne and Huffman (2005) believed that mentorship is positively related to organizational commitment which they described as the "relative strength of an individual with identification and involvement in an organization." Additionally, they hypothesized that

mentees receiving career-related mentorship functions will have a higher commitment to staying with the organization than if they received psychosocial support functions (Payne & Huffman, 2005).

The findings in each of these studies complement one another in most ways and serve to further the literature on the link between mentorship and retention. Both studies found that most of their samples indicated having at least one mentor with Viator and Scandura (1991) noting that 66% of their population with mentors showing intentions of retaining with the firm. As hypothesized, Viator and Scandura (1991) also found a link between mentorship and retention behaviors, which were notably held across different organizational levels and genders. Payne and Huffman (2005) echoed some results of Viator and Scandura finding not only a positive relationship between mentoring and intentions to stay, but that these retention ideas continued to hold even one year later. To quantify the relationship between mentoring and turnover rates, Payne and Huffman (2005) conducted an odds ratio analysis using a logistic regression approach and found that by engaging in a mentorship relationship, the odds of turnover decreased by 38% for protégés (Viator & Scandura, 1991; Payne & Huffman, 2005).

The questions and methodology used in these studies provide econometric and theoretical support for the models and questions explored in this thesis. Like these studies, this thesis aims to quantify the effect of mentorship on retention using OLS and logistic regression analysis. Similar to Payne and Huffman's (2005) research, this thesis excludes those mentees that attrite from the military prior to the desired retention outcome for involuntary reasons, so as not to attribute the role of mentor on uncontrollable situations. However, our study differs from these in several ways. While both Viator & Scandura (1991) and Payne & Huffman (2005) studied those mentorship relationships that were naturally occurring, the mentors in our study are assigned to billets that require them to establish relationships and interact with the mentees, thus taking on somewhat of a 'formal' mentorship. These studies were also subject to self-selecting bias because they only received surveys back from those who chose to report on their mentorship, whereas our study is examining archival data on all possible mentees. Not only does this provide us with a more holistic approach, but our sample of mentees to examine is much larger than

the roughly 1,300 surveys examined by each of these studies (Viator & Scandura, 1991; Payne & Huffman, 2005).

3. Mentorship and Shared Characteristics

a. Study by Blake-Beard et. al (2011)

One of the many goals behind studying the effects of mentorship is to determine and document the conditions which provide the greatest success, so conditions can be replicated for the future. One such condition that has been proposed by researchers to have a positive effect is the assumption that "proteges will experience the greatest successes when they match with mentors on the basis of race and/or gender" (Noe, 1988). Blake-Beard et. al. (2011) examined the validity of this assumption as part of their study. The literature they examined found results indicating that matching characteristics of gender and race between a mentor and mentee had both positive and negative results on various outcomes (Noe, 1988; Blake-Beard et al., 2011). Therefore, among other questions, Blake-Beard et. al. examined the "effects of race and gender matching in terms of students' mentoring experiences and academic outcomes" (2011). Their data was collected from an email survey sent out to participants of a popular mentoring website, MentorNet. They received 2,441 completed surveys from a target population of undergraduate, graduate, and post-doctoral STEM program students that ranged in both gender and race. As part of the survey, mentees were asked about demographics of themselves and their mentor, as well as how important they felt matching these characteristics were to a successful mentorship. The researchers conducted multiple regressions and chi-squared analyses on these data for their study using the academic outcomes of self-reported GPA, efficacy, and confidence as dependent variables.

In examining to what extent mentees of "different ethnicities and gender report they have been mentored by an individual of their own race or gender," the researchers found that 71% and 87% of females and males respectively were mentored by a matching gender, with smaller percentages of racial groups being matched (41% Asian-American, 47% other targeted minorities). However, like some of the literature they reviewed, Blake-Beard et. al. (2011) found that their, "regression analyses failed to provide evidence that gender or

racial matching affects academic outcomes." This finding also held true despite the mentee's rating of matching characteristics with mentor as highly important.

Blake-Beard et. al.'s study serves to expend the literature on the effect of mentor and mentee matching characteristics, which is what this thesis also aims to do. Though the sample size used was larger than many other studies conducted on mentorship, by using a survey, their results are susceptible to self-selection bias. Our study avoids this limitation by using historical data on the entirety of our target population and identify matching characteristics between mentor and mentee through provided variables. A further difference between Blake-Beard et. al.'s (2011) study and ours can be found in the dependent variables, as our study examines the retention of the mentee as determined by whether they have remained in the Marine Corps to a certain point, as opposed to self-reported outcomes of GPA, efficacy, and confidence.

b. Study by Rockoff (2008)

Race and gender are not the sole characteristics that can be matched between mentor and mentee, as shown by a study on New York City's Department of Education's mentorship program in the early 2000s conducted by Rockoff (2008). In the study, Rockoff examined the effects of mentoring on selected employee outcomes, specifically looking at whether the similarity of mentor and mentee characteristics have implications for the success of mentoring. The NYC Dept of Education established a mentoring program in 2004 that required "all teachers with less than a year of teaching experience receive a 'mentored experience'," that had a goal of reducing turnover among new teachers. Rockoff used detailed data collected from the program to conduct her analyses on teacher (mentee) retention, defined as staying at the same school the following year. Information collected included demographic variables, and school/subject taught of both mentor and mentee, among other variables. Since mentors were formally assigned multiple mentees, some across different school districts, data was also collected on the number of hours spent with each mentee. Rockoff hypothesized that retention outcomes for the teachers (mentees) would improve as they shared more characteristics with their mentor (demographics, school, subject area).

In her findings, Rockoff concluded different results for each grouping of shared characteristics between mentor and mentee. Gender and race similarities were found to have a negative or neutral impact on teacher retention, while a positive impact was noted when the mentor had previously taught at the same school as the mentee. Rockoff believed this second finding could be because mentors were able to "provide school-specific information and guidance." However, when the mentor taught in the same subject area as the mentee, there was a negative relationship with teacher retention. In addition to her findings on shared characteristics between mentor and mentee, Rockoff also noted a negative relationship between mentee to mentor ratio and teacher retention, but a positive relationship on number of hours mentored (Rockoff, 2008).

With regards to matching race and gender between mentor and mentee, the findings in Rockoff's study serves to reinforce the research on its negative relationship with desired outcomes. This thesis seeks to examine not only this relationship but also look at whether the shared accession source between mentor and mentee have a similar positive relationship as school experience did in Rockoff's study. One of the differences in our thesis is that the assignment of mentors is different than the formal approach taken by the DoE in Rockoff's study. Though our mentors are assigned to the billets they hold and thus have a responsibility for developing a relationship with those prospective officers, they are not directly matched based on characteristics as the mentors and teachers in Rockoff's study were. Furthermore, our study examines a steady population of mentees who are retained through the accession process, whereas Rockoff's population of teachers and mentors had the choice of leaving at any point, which added challenges to her analyses.

4. Military Mentorship

Mentorship within the military has become increasingly a larger focus over the past years, with it now being included in vision statements, doctrine, and publications across the services (USMC, 2019; Lyle & Smith, 2014; U.S. Army, 2017). The structure of the military is such that almost everyone rises through the ranks, making those in more senior positions ideal to mentor newcomers. Most recently in the Marine Corps' Commandant's Planning Guidance of 2019, General Berger insisted on officers taking on roles of "teacher,

coach, and mentor" toward their junior officers and enlisted leaders (USMC, 2019). Though studies on mentorship in the military are limited, its prevalence and benefits are highlighted empirically in some recent studies.

a. Study by Hu et. al. (2008)

In 2008, a study was conducted on formal mentoring relationships in military academies in Taiwan and found varying results in the benefits each mentoring function had on the outcome of commitment to a military career for the two populations studied (Hu, C. et al., 2008). The formal mentorship program is set up such that each entering freshman is paired with a same-gender sophomore as a mentor and this relationship is continued until the senior officer graduates. Though none of the students receive any training on mentorship, there are resources available such as counseling centers and class advisors who are tasked with assisting the mentors to be effective. Through a survey requiring responses on a six-point scale about various measures conducted mid-way through the first semester of the year, data was collected on 1,083 students across six military academies and separated by grade level: senior or freshman.

The researchers believed that, "both career and psychosocial mentoring functions would be positively related to mentoring outcomes of protégés," with each function being more strongly associated with the outcomes typical of that function (Hu et al., 2008). Additionally, the researchers wanted to explore the differences in the mentoring functions and career outcomes by grade. Through hierarchical multiple regression analysis, Hu et. al. found that despite many of their hypotheses being supported, "the receipt of career mentoring was more negatively related to a freshmen's commitment to a military career" (2008). They attributed this finding to 'reality shock' of freshmen, whereby one's expectations about their life at school and career differ from reality but noted that additional research "using a longitudinal approach is needed to conclude whether time moderates the relationship between career mentoring and career commitment" (Hu et. al., 2008). Further, the study found that those protégés who received career mentoring were more likely to provide both career and psychosocial mentoring to their future protégés, as compared to

protégé's who only received psychosocial mentoring stating that they would most likely only provide this function to their mentee.

Hu et. al.'s study provides us with an initial analysis of the benefits of a formal mentoring program for peers in a military environment. It focused on a formally established relationship between mentor and mentee and acknowledged through findings that the duration of a mentoring relationship has differing effects. Our study seeks to expand military mentorship literature but differs from this study in two key elements. First, the mentor relationships we are studying are not formally assigned like Hu did in his research. Our mentors are selected to the billets they hold but may or may not interact with prospective officers (mentees) beyond prescribed events. Additionally, our study is focused on quantitative evidence of mentorship gathered through existing data, rather than a qualitative survey which is susceptible to subjectivity. Like Hu's research, our thesis acknowledges and examines differences in and effects of duration of mentoring relationships on the career outcome of retention of the mentee.

b. Study by Steinberg and Foley (1999)

Steinberg and Foley studied mentorship within operating forces in the Army to empirically determine what behaviors constitute mentoring as well as discover if a 'glass-ceiling' exists for women and minorities which may impact their career progression due to Army being a white and male dominated organization (1999). The researchers conducted a mail-in survey of active-duty Army senior non-commissioned officers (NCOs) and commissioned officers, of which 3,715 responded, in addition to a structured interview conducted on two Army bases, of which there were 123 respondents. Researchers made a point of not providing a specified definition of mentorship, wanting to rely instead on the respondent's perception of whether they have either served as a mentor or experienced one themselves. The survey asked participants whether they experienced 16 types of mentoring behaviors, and if so, how helpful each one was on a five-point scale. The interview gained information on how participants define mentoring by asking about mentoring experiences.

Findings in this study indicate that almost all respondents received each of the 16 mentoring behaviors, which they also rated as being very or extremely helpful. In terms of

who mentors and who is being mentored, 74% of respondents said they were currently mentoring someone, while only 47% indicated they currently had a mentor (Steinberg & Foley, 1999). For those officers without mentors, 7% more female 1stLt and 7% more female Majors indicated they "would have liked [a mentor]" than their male counterparts. Of those officers with mentors, junior officers (1stLt –Capt), were more likely to have a mentor than senior officers or senior NCOs (Steinberg & Foley, 1999). Researchers also noted there was a difference in what participants perceived as a mentor. Participants who said they were a mentor to someone else indicated this was mostly due to the billet they held, but when describing their mentor, referred to a more specific, one-on-one relationship that often "endured beyond a particular military assignment" (Steinberg & Foley, 1999).

This study provides insight on mentorship from the operating forces perspective and highlights the perception that holding a certain billet can entail mentorship duties. Our thesis utilizes this relationship between billet and mentor as an assumption in that officers who are serving as MOIs at NROTC units provide mentoring functions despite not having mentees formally assigned. Though Steinberg and Foley (1999) found evidence to suggest that mentoring is "not the primary contributor to a glass ceiling in the Army," their study only looked at whether minority genders and races had mentors. Our study explores gender and race in more depth through comparing these attributes with those of their mentors to see which ones overlap and may influence the mentee's retention decisions.

c. Study by Lyle and Smith (2014)

Mentorship typically involves a senior, more experienced person providing career and psychosocial function to a more junior, inexperienced individual. A common assumption is that the mentor got to where they are by being a high-performer and thus will pass-on their good knowledge. Lyle and Smith (2014) studied this assumption in Army officers by examining "the impact of high-performing mentors on job advancement of their subordinates." Their study examined officers from 1974 through 2010 and focused on the relationship between Lieutenant Colonels serving as Battalion Commanders, denoted as either high-performing or not by the Army, and Captains serving as Company Commanders. Lyle and Smith hypothesized that a Captain who has a high-performing

mentor will have an increased likelihood of achieving an early promotion, and that this likelihood will increase as the mentor relationship continues in duration. Due to typical billet rotations of Battalion commanders, the study also examined the impact of a company commander being mentored by multiple Lieutenant Colonels and the duration of the mentor relationship.

To test these hypotheses, Lyle and Smith used a set of linear probability models with a binary dependent variable indicating whether the mentee was promoted ahead of their peers to Major. The four models used varied by number and type of independent variables measured, as they examined impacts of the mentor's performance, demographic covariates, as well as controls for cohort year, branch, and unit. A mentor was classified as a high performer if they had been promoted ahead of their peers to the rank of Major, prior to being selected to Battalion command as a Lieutenant Colonel. They study included controls for the mentor/mentee's unit as a means of addressing "any concerns that unit reputation effects may influence" the promotion outcome.

Lyle and Smith (2014) found that a Company Commander's exposure to a high-quality mentor increased their probability of early promotion of 2.8 percentage points. This "estimate on the mentor effect remained stable and significant" when additional variables that could be "determinants of early promotion (race, marital status, SAT quartile, etc.)" were added to the model (Lyle & Smith, 2014). The hypothesis regarding duration of mentor relationship was also supported, as the researchers found that one additional month of having a high-performing mentor increased the likelihood of early promotion by an average of .18 percentage points (.19 percentage points for 'naïve' model, .17 percentage points for 'full' model). "Since only 5.72% of Company Commanders studied had more than one high-quality mentor, the effect of having multiple high-quality mentors was found to be not statistically significant" (Lyle & Smith, 2014).

Lyle and Smith's study analyzes the varying effects of high-performing mentors on a protégé's outcomes and examines how the protégés' ability combined with a high-performing mentor can influence promotion outcomes. This thesis uses similar methodology in examining the outcome of the mentee's retention but differs from this study in several ways. First, because the Marine Corps does not have accelerated

promotions for officers like the Army, our measure of performance instead be gleaned from FITREP data prior to the officer serving in a MOI billet. This method supports the idea that the mentor relationships being studied are formed exogenously, with a prospective mentee having no impact on the prior performance of their mentor. A second distinction from Lyle and Smith's study relates to both duration of the mentoring relationship and the number of mentees a mentor is responsible for. The subjects in our study may have relationships spanning anywhere from 12–36 months on average. Fourth, while Lyle and Smith found having multiple mentors insignificant to a mentee's early promotion due to only a small percentage of the population being exposed to multiple Battalion Commanders, a majority of mentees in our study will have had multiple mentors, due to the NROTC commissioning programs spanning 48 months, over a year more than mentors at those programs holding billets. Fifth, our study expands upon the population Lyle and Smith examined by including officers of both genders. A final difference in our study is the outcome being studied. While both promotion and retention can be categorized as 'career outcomes', we have chosen to focus on the latter as a means of comparing our results with other retention studies (Ragins & Scandura, 1999, Kram, 1983).

d. Studies by Johnson et al. (2001) and Baker (2003)

Despite the lack overall of studies conducted on mentorship in the military, there have been several studies conducted on the role, impact, and prevalence of mentorship at the USNA for officers in training in the recent past (Johnson et al., 2001; Baker et al., 2003). In each of these studies, various midshipmen populations were asked to respond to surveys asking them about their experiences as both a mentor or protégé during their time at the Naval Academy, focusing on whether they had a mentor, how long the mentor-relationship lasted, what functions were provided by the mentor, and whether having a mentor affected their career intentions. Johnson received surveys from 576 third-year students (juniors) of 932 that were sampled, approximately 62% of the class, while Baker received 568 surveys from across a 1368 midshipmen sample encompassing all four grades.

The research showed that an estimated 40–45% of midshipmen reported having a significant mentor during their time at school, with higher percentages reported by women and upperclassmen (Johnson, 2001; Baker, 2003). While each study found most mentors being in the military, there was a large range, 40% and 60% reported by the Baker and Johnson studies, respectively. Additionally, the Johnson study identified that mentor relationships were typically initiated by the mentor and were almost equally divided in duration from 1–2yrs (36%) and 4+yrs (31%) (Johnson, 2001). Of note, in the Baker study, midshipmen who had mentors were not significantly higher performers in GPA or order of merit, nor did their military career aspirations differ significantly from their peers without mentors.

The findings from these studies reinforce one another and serve to expand the literature on mentorship for officers in the early stages of their careers. While Baker and Johnson explored prevalence of and details regarding all types of mentors (civilian vs. military) midshipmen may have access to, this thesis uses a narrower scope, only examining those specific billet holders whose role it is to have direct contact with prospective Marine officers (MOI), as they are able to be selected to mentoring positions. It was highlighted in these studies that duration of mentorship relationships varies, however, neither study attempted to link duration differences to outcomes of interest as this thesis aims to do. Furthermore, Baker questioned the midshipmen on what their military career intentions were at the time of the survey but did not have a means to measure whether these intentions came true, thus leaving unanswered what the mentor's impact beyond the school setting may have been. This thesis aims to connect the role of mentor during the accession process to outcomes in the mentee's career, to gain perspective on what types of mentors are linked with more desirable career outcomes such as retention.

D. SUMMARY

The literature review finds that commissioning source and other demographic variables are valid predictors of an officer's career retention decisions. The studies that examined military retention aid this study in creating data sets and devising models to analyze retention in the Marine Corps. While studies on mentorship in the military are

limited, the ones we examined displayed a gap in empirically examining the role of mentorship at the accession source level. It is commonly agreed that mentorship can positively effect career retention decisions, but this has yet to be explored in the military. Further, the impact of a mentor's performance and having shared attributes with a mentee have been identified as possible factors that may affect career outcomes such as performance, satisfaction, and retention and serve to provide a framework for analysis in this thesis.

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IV. DATA AND METHODOLOGY

A. INTRODUCTION

This chapter first describes the data and samples chosen for statistical analysis. Then it defines the dependent (outcome) and independent (explanatory) variables used in the multivariate analysis and provides basic descriptive statistics of each. Finally, the chapter provides a review of the methodology used to specify each research model.

B. DATA AND SAMPLE SELECTION

The data for this thesis is drawn from three different sources: Naval Education Training Command (NETC), Total Force Data Warehouse (TFDW), and Manpower Management Records and Performance Branch (MMRP)-30. The data we examine for retention are for all active-duty Marine Corps officers from 2000–2015.

1. NETC

NETC provided a file listing all those midshipmen who partook in a NROTC program and were Marine options. From this file we only use those midshipmen who commissioned from the program as our respective list of mentees (12,944) included those who had been in the program at any time whether commissioned or attrite. In addition to providing us variables for school, unit name, commission/attrition determinants, and scholarship length, the file also included first and last name and commissioning date which were required to merge with our TFDW file.

2. MMRP-30

MMRP-30 provided a file in panel format for all officer FITREPs from 1998–2015 and included information for every field filled out in the FITREP. We identify those individual officers who held a mentor position (MOI) at some point in their careers by analyzing monitored command codes (MCC), and then calculate performance measures using provided RS cumulative RV. For our analysis, we only use reports that were observed

and have attribute scores. This file plays a key role in this thesis as it provides the basis from which we analyze a mentor's performance.

3. TFDW

The file received from TFDW provides demographic and commissioning source variables which we use to conduct comparisons of our two populations (mentors and mentees) with the same characteristics. Additionally, the file is instrumental in creating a key that we use to match and merge both NETC and MMRP-30 FITREP files. Further, this file assists in the creation of our outcome variables for career retention milestones.

4. All Officer Dataset

The dataset we use for verifying the validity of retention models is derived solely from the TFDW file. The population includes all officers commissioned from 2000–2015, excluding those prior-enlisted, aviators, and lawyers, of which there are 15,592. We use this total population to create sample populations that correspond to the three different career milestones (outcome variables). We create these sample populations for retention at the 5-, 7-, and 10-year marks by calculating the number of years of commissioned service for each officer. If the officer's number of commissioned service years matches or is greater than these metrics (5,7,10 years), they are included in the respective sample.

5. NROTC Only Dataset

The final dataset we use for analysis is a list of all NROTC mentees with school and TFDW demographic information that are matched with their respective MOI mentor(s) whose TFDW, FITREP/performance, and mentor-mentee shared attributes are listed. Of our initial list of 4,970 NROTC mentees who commissioned from 2000–2020, we successfully match 2,450 with corresponding mentors, creating our total sample population for the 2001–2015 timeframe. Like the dataset used to validate the basic retention models, this sample is also separated into sub-samples by career retention milestones.

6. Data Issues

In examining the data before running our analysis, we notice there are a handful of issues that we need to rectify before proceeding. First, there is a discrepancy between the commissioning source listed in the TFDW and NETC files. Because we have a NETC file for an officer, we changed the commissioning source in the TFDW file to reflect the NROTC program. Next, we identify that some females have different last names between the two files. We believe this to be the case due to these individuals getting married following their commissioning from school. We compare these individuals' first names between TFDW and NETC files, and make appropriate changes to their last names, so we can successfully merge the records for these officers.

In the FITREP data received from MMRP, we discover that we do not have all the FITREPs for officers who serve as MOIs at some point in their careers, due to the FITREP data provided starting in 1998 and some of these officers commissioning before 1998. We do not remove these mentors and their corresponding mentees from our study, as it would significantly reduce our sample size. We recognize this may cause measurement error in our analysis but believe it to be negligible because these missing FITREPs would be from an earlier point in their careers (2nd/1st Lieutenant timeframe) and we still have some FITREPs from before they were MOIs. Further, we discover that the RSs for many MOIs is not a Marine officer and thus does not have a FITREP profile that calculates their RV and cumulative RV (approximately 577 reports). We attempt to rectify this issue by calculating a relative value for a given mentor's FITREP and do not expect to see any measurement error as a result (See Appendix E).

C. VARIABLES

The outcome and explanatory variables in this thesis are partially derived based on guidance from other theses and studies. The retention models this thesis examine use different dependent variables for statistical analysis. The independent variables we use are grouped into several categories to draw out the effects on an officer's retention decision. In this section, a brief description of each variable and how they are calculated/derived is provided.

1. Outcome

The dependent variables in the models are coded in a binary manner and represent whether an officer achieved the required number of commissioning years to meet the milestone. The retention milestone dependent variables are derived using the years of commissioned service variable from the TFDW file. Since MMRP-30 provided in panel format by year of active service, officers are coded as reaching the desired retention milestone (5-, 7-, 10-years) for a specific observation if their years of commissioned service reaches our retention milestone.

This thesis uses the 5, 7, and 10-year milestones as outcome variables for two reasons: 1) to be comparable to other theses/studies; 2) To coincide with and capture points in an officer's career where retention decisions are typically made. As mentioned in the background, career designation decisions happen around the 3.5-4-year mark of an officer's career, thus analyzing retention at the 5yr mark would include those officers who accepted designation and chose to further their careers. Similarly, the 7 and 10-year milestones occur just after an officer accepts/is executing orders for their $2^{nd}/3^{rd}$ tours of duty, so these milestones would likely capture the retention decisions. These milestones are measured by using the exact point in which the officer had served the given amount of retention years and does not indicate whether they served any longer than this amount and then attrite. This thesis does not explore any further retention milestones due to the likelihood that the impact of the initial mentor, in this case the MOI, would be negligible for an extended period (Kram,1983).

2. Explanatory

The explanatory variables are first separated in relation of who they pertain to, either mentor, mentee, or both, and then are grouped into several sub-categories.

a. Mentee

Data for those officers classified as 'mentees' in this study are derived from the TFDW and NETC files. We first filter the TFDW file by commissioning source, keeping only those officers who attended a NROTC program. Then, we match these officers using

first- and last-names and commissioning year with those in the NETC file. After removing those officers who have irregular contracts (lawyers and aviators) we had a working file of 2,450 mentees. Those mentors who overlapped with a mentee less than 30 days were removed from the data set. This is due to the time it takes for a mentor to develop a relationship with their mentee. The merged TFDW and NETC files for the mentees include the variables listed in Table 1.

Table 1. Mentee Variables

Variable Name	**Variable Definition**	**Range/Coding**
Demographic Variables		
Mentee_Gender	Female/Male	=1 if Female =2 if Male
Mentee_Race	Race	=1 if White =2 if African American =3 if Asian =4 if American Indian =5 if Declined
Mentee_Marital _5yrs	Marital Status at 5 years	=1 if married at 5 years retention =0 if otherwise
Mentee_Marital _7yrs	Marital Status at 7 Years	=1 if married at 7 years retention =0 if otherwise
Mentee_Marital _10yrs	Marital Status at 10 Years	=1 if married at 10 years retention =0 if otherwise
Mentee_Child _5yrs	Children Status at 5 years	=1 if had children at 5 years retention =0 if otherwise
Mentee_Child_7yrs	Children Status at 7 Years	=1 if has children at 7 years retention =0 if otherwise
Mentee_Child_10yrs	Children Status at 10 Years	=1 if has children at 10 years retention =0 if otherwise
Mentee_MOS	MOS Category	= 1 if Combat Arms = 2 if Service Support = 3 if Aviation

Variable Name	Variable Definition	Range/Coding
School Information		
Scholarship_Length	Scholarship Length	=1 if 1 year scholarship =2 if 2-year scholarship =3 if 3-year scholarship =4 if 4-year scholarship
Tuition	Tuition Type	=1 if In State =2 if Out of State =3 if Private

b. Mentor

The data for those officers classified as 'mentors' was derived from TFDW and MMRP-30 files. We first remove all officers who had never served in an MOI capacity, by examining the MCC of all the FITREPs received by an officer against a list of MCCs for all NROTC programs (see Appendix F). We use variables for gender, race, and commissioning source, as provided by the TFDW file. The MOS variable is categorized into three buckets based on occupational specialty (See Appendix G).

Then, using data from the MMRP-30 FITREP file, we create a series of variables for the mentor that capture averages of their FITREP Cumulative Relative Values for three different periods, captured in the following buckets: 1) from commissioning date until the MOI billet starts, 2) for the duration the MOI billet is held, and 3) from commissioning date through the end of the MOI billet (combines parts 1 and 2). The Relative Value averages within these mentor career buckets are then further categorized into performance buckets using Marine Corps FITREP standards as follows: 80–86.66 is categorized as Below-Average, 86.67-93.33 as Average, and 93.34-100 as Above-Average. Appendix H outlines the Marine Corps FITREPs standards and shows how the Relative Value is calculated. (Appendix H). Table 2 displays the variables used for 'mentors' in this study.

Table 2. Mentor Variables

Variable Name	**Variable Definition**	**Range/Coding**
Demographic Variables		
Mentor_Gender	Female/Male	=1 if Female =2 if Male
Mentor_Race	Race	=1 if White =2 if African American =3 if Asian =4 if American Indian =5 if Declined
Mentor_Marital _5yrs	Marital Status at 5 years	=1 if married at 5 years retention =0 if otherwise
Mentor_Marital _7yrs	Marital Status at 7 Years	=1 if married at 7 years retention =0 if otherwise
Mentor_Marital _10yrs	Marital Status at 10 Years	=1 if married at 10 years retention =0 if otherwise
Mentor_Child _5yrs	Children Status at 5 years	=1 if had children at 5 years retention =0 if otherwise
Mentor_Child_7yrs	Children Status at 7 Years	=1 if has children at 7 years retention =0 if otherwise
Mentor_Child_10yrs	Children Status at 10 Years	=1 if has children at 10 years retention =0 if otherwise
Accession_Source	Commissioning Source	=1 if NROTC =2 if USNA =3 if PLC =4 if OCC =5 if Other
Mentor_MOS	MOS Category	=1 if Combat Arms =2 if Service Support =3 if Aviation

Variable Name	Variable Definition	Range/Coding
Performance Variables		
Before_moi_mean MOI_mean Ttl_mean	Career Time Period (FITREP RV averages calculated into 3 buckets, prior to being an MOI, while an MOI, and the cumulative average of prior and MOI time)	=1 if avg FITREP RV prior MOI =1 if avg FITREP RV as MOI =1 if avg FITREP RV cumulative (before and during MOI)
Before_below_avg Before_avg Before_above_avg MOI_below_avg MOI_avg MOI_above_avg Overall_below_avg Overall_avg Overall_above_avg	Performance Bucket (Below, Avg, Above)	=1 if RV avg before MOI is below avg =1 if RV avg before MOI is avg =1 if RV avg before MOI is above avg =1 if RV avg during MOI is below avg =1 if RV avg during MOI is avg =1 if RV avg before MOI is above avg =1 if RV avg Cumulative is below avg =1 if RV avg Cumulative is avg =1 if RV avg Cumulative is above avg
First_mentor Last_mentor Longest_mentor	Mentor type (first, last, longest)	=1 if mentee's first mentor =1 if mentee's last mentor =1 if mentee's longest mentor

c. Mentor and Mentee Combined

To conduct our analysis of the predicted effect of a mentor on a mentee's retention, we combined the mentor and mentee datasets, matching based on MCC and overlapping

school attendance (mentee) and MOI FITREP (mentor) dates. Then, to analyze the effect of matching attributes on mentee retention decisions, we create binary variables that capture the number of matching attributes between mentor and mentee, that specify which attributes matched, and then we interact those matched attributes with their individual characteristics. Table 3 displays the variables used to attribute matches.

Table 3. Mentee and Mentor Combined Variables

Variable Name	Variable Definition	Range/Coding
Specific Attribute Matches		
Share_Gender	Mentee and Mentor Share Gender	=1 if mentee and mentor share gender =0 if otherwise
Share_Race	Mentee and Mentor Share Race	=1 if mentee and mentor share race =0 if otherwise
Share_CommSrc	Mentee and Mentor Share Commissioning Source	=1 if mentee and mentor share commissioning source =0 if otherwise
Interacted Matched Attributes		
whitementee_whitementor	White Mentee has a White Mentor	=1 White Mentee has a White Mentor =0 if otherwise
nonwhitementee_whitementor	Non-white Mentee has a White mentor	=1 if Non-white Mentee has a White mentor =0 if otherwise
whitementee_nonwhitementor	White Mentee has a Non-white Mentor	=1 if White Mentee has a Non-white Mentor =0 if otherwise
nonwhitementee_nonwhitementor	Non-white Mentee has a Non-white Mentor	=1 if Non-white Mentee has a Non-white Mentor =0 otherwise

D. DESCRIPTIVE/SUMMARY STATISTICS

This section provides the sample summary statistics of the variables in each of our different samples, unless otherwise noted. The means and standard deviations of the variables we use to predict retention in each of our models are shown in order to give us a baseline for further comparison.

1. All Officer Sample

Table 4 provides an illustration of the explanatory demographic variables utilized to compare factors within our All-Officer data set. These statistics are useful when verifying and comparing the primary variables used in Marine Corps officer retention models. The statistics for officers shown in table align with characteristics for the entire Marine Corps in that females (10.3%) and non-white races are the minority. Additionally, consistent with the 2013 Marine Corps Almanac, which depicts among other statistics, the distribution of commissioning sources, the PLC program has the most active-duty officers (30.2%), followed closely by OCC with 28.1% (USMC, 2013).

Table 4. All Officer Descriptive Statistics

Variable	Obs	Mean	Std. Dev.
Age	15952	30.247	5.212
Female	15952	0.103	0.303
USNA	15952	0.161	0.367
NROTC	15952	0.192	0.394
PLC	15952	0.302	0.459
OCC	15952	0.281	0.450
White	15952	0.851	0.356
AA	15952	0.047	0.212
Asian	15952	0.039	0.193
Other	15952	0.015	0.123
No Resp	15952	0.048	0.214
Single	15952	0.402	0.490
Divorced	15952	0.033	0.180
Married	15952	0.565	0.496
Child	15952	0.622	1.070

2. NROTC Sample

Table 5 represents the variables we use in our model that includes only those officers commissioned from a NROTC program. We note the same demographics variables utilized for the full sample with the addition of NROTC school information such as scholarship length and tuition type. The Marine Corps' recruiting mission provides only 4-year scholarships, so those recipients of scholarships of lesser lengths are awarded by the

NROTC program, thus we find it interesting that only 65.6% of our sample were commissioned with a 4-year scholarship. We also discover that there is not much disparity between an officer attending an In State, Out of State, or Private college/university.

Table 5. NROTC Only Demographic Statistics

Variable	Obs	Mean	Std. Dev.
White	3092	0.894	0.308
AA	3092	0.034	0.182
Asian	3092	0.033	0.179
Other	3092	0.009	0.096
No Resp	3092	0.029	0.169
Single	3092	0.429	0.495
Divorced	3092	0.034	0.181
Married	3092	0.537	0.499
Child	3092	0.154	0.361
1 year Scholarship	3092	0.005	0.069
2-year Scholarship	3092	0.114	0.318
3-year Scholarship	3092	0.225	0.418
4-year Scholarship	3092	0.656	0.475
In State Tuition	3092	0.377	0.485
Out of State Tuition	3092	0.372	0.483
Private Tuition	3092	0.251	0.434

3. Mentor Performance

The important factors to ascertain whether the performance of a mentor influences the retention of mentees are described in Table 6. We include variables that account for different time periods in a mentor's career: before they held an MOI billet, the time during which they held the billet, and an overall measure which combines the previous two. Further, as described in the section on mentor explanatory variables, an MOI's performance is divided into below-average, average, and above-average performance buckets. Unsurprisingly, those officers selected as MOIs mainly fall into average or above average performance buckets, regardless of career time-period.

Table 6. Mentor Performance Statistics

Variable	Obs	Mean	Std. Dev.
Before Below Avg	4723	0.068	0.252
Before Avg	4723	0.593	0.491
Before Above Avg	4723	0.339	0.473
MOI Below Avg	4723	0.105	0.307
MOI Avg	4723	0.570	0.495
MOI Above Avg	4723	0.324	0.468
Overall Below Avg	4723	0.023	0.150
Overall Avg	4723	0.743	0.437
Overall Above Avg	4723	0.234	0.424

Table 7 compares the before, during, and cumulative RVs as scores, rather than a percentage out of all observations. This information illustrates the mean RV and shows that out of the 74.3% of mentors that fall into the cumulative average category, the mean RV is 90.855. This important to note, as the Marine Corps uses the average performance bucket as the standard when looking at retention and promotion within a Marine's career.

Table 7. Mentor Performance Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Before Below Avg	321	83.120	2.482	80.000	86.420
Before Avg	2,803	90.611	1.686	86.788	93.232
Before Above Avg	1,599	95.300	1.402	93.383	100.000
MOI Below Avg	497	84.565	2.192	80.000	86.670
MOI Avg	2,694	89.790	1.622	86.705	93.320
MOI Above Avg	1,532	95.971	1.407	93.333	100.000
Cumulative Below Avg	109	84.803	1.379	83.333	86.446
Cumulative Avg	3,508	90.855	1.687	86.932	93.323
Cumulative Above Avg	1,106	95.060	1.118	93.369	97.673

4. Shared Attributes

Table 8 provides an illustration of the mentees that share attributes with their mentor by gender, race, and commissioning source, breaking down even further into specific non-minority and minority categories. We discover that 86.9% of our mentees

share the same gender and 77.7% share race with their mentor. This is not surprising as the Marine Corps has a greater population of white males than any other race and gender. Of those mentees and mentors that share the same race, 77.1% share white as a race, while only 1.5% share a minority race.

Table 8. Mentee/Mentor Shared Attributes Descriptive Statistics

Variable	Obs	Mean	Std. Dev.
Shared Gender	4723	0.869	0.338
Shared Race	4723	0.777	0.416
Shared Commissioning Source	4723	0.228	0.419
White Mentee & White Mentor	4723	0.771	0.420
Non-white Mentee & White Mentor	4723	0.079	0.269
White Mentee & Non-white Mentor	4723	0.135	0.342
Non-white Mentee & Non-white mentor	4723	0.015	0.122

E. METHODOLOGY

The purpose of this analysis is to determine what factors are effective in predicting the probability of a Marine Corps officer choosing to remain on active duty or not at various milestones in their career. A multivariate regression is a method to analyze the effect of a given variable(s) (x_i) on a specific variable (y), when holding the effects of other variables constant (ceteris paribus) (University of South Florida, n.d.; Smith, 2018; Statistics Solutions, n.d.; Grace-Martin, n.d.; Molnar, 2021; Andreister, 2012). While an ordinary linear regression is the most common and simplest of the multivariate models, it is not as effective in predicting effects on outcomes of dichotomous or binary variables because it produces predicted values that are greater than one and less than zero. A logistic regression (Logit) model, however, allows for outputs to be interpreted as probabilities. Further, using odds ratio analysis with the Logit models allow for predicting the strength of the association between independent and dependent variables (University of South Florida,

n.d.; Smith, 2018; Statistics Solutions, n.d.; Grace-Martin, n.d.; Molnar, 2021; Andreister, 2012).

Due to the retention outcomes in this thesis being binary, we use logit regression models with odds ratio analysis to predict how our explanatory variables affect retention outcomes. Each of our models include controls for common aspects within an officer's file (gender, race, etc.) and then expand to include those variables relating to the focus of this study: mentor performance and mentee-mentor shared attributes.

The next chapter details each of the models this thesis explores, explaining which variables are used in addition to our baseline variables and why. We then provide our hypothesized expectations, followed by the results of each model.

F. SUMMARY

This chapter included a description of our datasets and defined the samples used for each regression. We provided a list of both dependent and independent variables that will be used throughout our analysis and discussed descriptive statistics of key variables. Finally, we discuss our methodology of using logistic regressions with odds ratios to analyze the predictability of our variables on our desired career outcomes. The next chapter will focus on a discussion of each model we run and present our hypothesized effects and results.

V. ANALYSIS AND RESULTS

A. INTRODUCTION

The previous chapter uses descriptive statistics to highlight whether the decision to retain at different career milestones differ by criteria such as demographics, mentor performance, and shared mentee-mentor attributes; providing insight into which areas should be analyzed further. This chapter specifies the multivariate logistics models used to analyze key areas, providing discussion on the justification to use additional variables beyond the baseline categories. Hypothesized effects of the explanatory variables are also included, followed by presentation of significant findings from the model results. Full regression outputs for each model can be found in Appendix D.

B. ALL-OFFICER RETENTION MODEL

1. Model Specification

The models used for the retention of all Marine officers are conducted to validate the findings from earlier studies and include variables found to be previously significant. Though prior studies focused on retention at the 10-year mark or longer, our study includes 5- and 7-year milestones, as the role of mentorship, which is the primary focus of this study, typically does not have long-lasting effects (Ergun, 2003; O'Brien, 2002; Kram, 1983). Unlike previous models, this study does not divide the independent variables into categories to study the effect of each, as this model is not the focus of this analysis. The base case for these models is a married white male, who graduated from the Naval Academy, serves in a service support MOS, and has multiple dependents, as these attributes represent the largest portions in the sample. Table 9 presents the logit model specification used to examine retention across all three milestones.

Table 9. All-Officer Model Specification

Retention Milestone = *f* (Race, Gender, MOS Category*, Commissioning Source, Marital status, Children Status)

**MOS Category is determined by classifying occupational specialties per the description in Appendix G

2. Hypothesized Effects of the Explanatory Variables

We anticipate results for these models to closely mirror those of previous studies, whereby each of the examined categories of variables has a significant positive impact on retention outcomes. Specifically, we expect that male, white, and graduates from the USNA will have the highest odds of retention. Further, those who are married with children and have ground- or service-related MOSs will also be positive predictors of retention behavior.

3. Model Results

The odds ratio effects of the independent variables from our logistic models with significant results are presented in Table 10. It should be mentioned for interpretation purposes that a number above 1.0 indicates positive predictive odds, while a number below 1.0 indicates negative predictive odds. For example, those officers who attended an NROTC program are 26.4% less likely to retain to 5 years compared to those who attended the USNA, while married Marine officers are 71.0% more likely to attain to 5 years compared with single officers Further, it is important to note that when interpreting coefficients, all other variables are held constant (ceteris paribus).

Though our study cannot be directly compared to either Ergun or O'Brien's studies due to differences in examined variables, we find evidence for there to be a general pattern in a characteristic's relationship with retention. Across all three studies, we find that marital status, having children, and some minority races, and MOS categories are positive predictors of retention. Conversely, commissioning programs other than the USNA predict a negative relationship with retention. Given the similarities in trends across all three studies, we are confident that our sample is an accurate representation of the Marine Officer population.

Table 10. Odds Ratio for Officer Retention, Full Sample (Commissioning Years 2000–2015)

	(1) ret_5yrs	(2) ret_7yrs	(3) ret_10yrs
Asian	1.405*	1.215	1.477*
	(0.203)	(0.214)	(0.291)
NROTC	0.736***	0.836	0.736*
	(0.065)	(0.085)	(0.111)
PLC	0.685***	0.890	1.054
	(0.057)	(0.083)	(0.132)
OCC	0.386***	0.620***	1.449**
	(0.034)	(0.062)	(0.179)
Other	0.307***	0.213***	6.058***
	(0.077)	(0.085)	(1.016)
Combat Arms	1.228**	1.164*	0.910
	(0.079)	(0.083)	(0.080)
Married	1.710***	1.983***	2.766***
	(0.111)	(0.158)	(0.355)
Divorced	2.687***	3.441***	5.945***
	(0.464)	(0.542)	(1.069)
Children	1.742***	2.550***	4.694***
	(0.153)	(0.204)	(0.432)
Observations	8430	11017	13181

Exponentiated coefficients; Standard errors in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

C. NROTC-ONLY RETENTION MODEL

1. Model Specification

This model specification provides a more detailed analysis into only those officers who commissioned from a NROTC program and is conducted to serve as a baseline for comparison against the additional retention models used in the remainder of this analysis. This baseline model includes the same demographic variables from our all-officer model of race, gender, marital status, children status, and MOS category and adds school-related variables of scholarship length and tuition type from the NETC data file. We include these school variables as the findings may result in policy recommendations to adjust the number

of scholarships awarded by length or to adjust requirements of school applications based on tuition type. To our knowledge, there are no other studies that have examined the effect of these school-related variables on retention.

The reference case we use to compare categories is established by the highest proportion for each variable category across our sample. For our demographic variables we continue to use the base categories that were specified in the all-officer model (male, white, married, with children). For MOS category we use those with service support MOSs, and for our school variables we use 4-year scholarship and out-of-state tuition. Table 11 presents the logit model specification used to examine retention across all three milestones and outlines the specific characteristics of the comparison group that are used throughout all our models going forward.

Table 11. NROTC-Only Model Specification

Retention Milestone = *f* (Gender, Race, MOS Category*, Marital status, # children, Scholarship length, Tuition type)
Comparison group: Gender= Male Race= White MOS Category= Service Support Marital Status = Married Children status= Has children Scholarship length= 4 Year Tuition type= Out of State

**MOS Category is determined by classifying occupational specialties per the description in Appendix G

2. Hypothesized Effects of the Explanatory Variables

Table 12 lists the explanatory variables for the NROTC-Only retention models that we believe will be significant predictors and their hypothesized relationship to the retention milestones. We anticipate the relationship between demographic and school variables to remain consistent throughout the remainder of regressions in this analysis, thus will only specifically discuss our hypotheses foe these variables in this section.

Our demographic variables of marital and children status are expected to have a positive relationship with our retention outcomes, while gender and most minority races have an inconsequential effect, which would echo findings from our All-Officer model. We hypothesize that a longer scholarship length will have a larger positive effect in the 5- and 7-yr retention models, as officers may feel obligated to serve for these periods as a means of 'payback' for receiving a scholarship. Further we posit, officers who attended NROTC programs at out-of-state schools are predicted as having a positive impact on retention because they have undergone a significant adjustment in their lives by leaving their home-state, which could be akin to the experience of joining the Marine Corps.

Table 12. NROTC-Only Expected Signs

Variable Name	**Expected Sign**		
Retention Model	**Ret 5yr**	**Ret 7yr**	**Ret 10yr**
Scholarship Length (compared to 4years)			
3 Years	+	+	N/a
2 Years	+	N/a	N/a
1 Year	-	-	N/a
Tuition Type (compared to out-of-state)			
In-State	-	-	-
Private	N/a	N/a	N/a

3. Model Results

The odds ratio effects of the independent variables with significant results are presented in Table 13. Consistent with our findings in the All-Officer model, marital and children status continue to be strong positive predictors of retention for NROTC-only officers. We find slight changes in significance for females (compared to males) and for Asian officers (compared to whites) across the different models, and compared to the All-officer model, but do not believe the significance is related to a specific retention policy.

When examining the predictive power of scholarship length on our retention outcomes, we find that officers who received 2- and 3-year scholarships are more likely to meet the 5-year retention milestone (55% and 39.6%, respectively), and 2-year scholarship recipients are 44.5% more likely to achieve 7-year retention compared to officers who

received 4-year scholarships. Despite our hypothesis, there is no evidence to suggest that officers who attended In-State or Private schools are more or less likely to meet retention milestones.

Table 13. Odds Ratio for Officer Retention, NROTC Sample

	(1) ret_5yrs	(2) ret_7yrs	(3) ret_10yrs
Mentee Female	1.024	1.109	1.636*
	(0.124)	(0.146)	(0.338)
Mentee Asian	1.602*	1.909**	1.694
	(0.344)	(0.409)	(0.618)
Mentee Combat Arms	1.155	1.102	1.340*
	(0.097)	(0.098)	(0.175)
1 year Scholarship	1.853	2.411	0.360
	(1.040)	(1.319)	(0.408)
2-year Scholarship	1.550***	1.445**	1.424
	(0.192)	(0.183)	(0.278)
3-year Scholarship	1.396***	1.183	1.116
	(0.130)	(0.117)	(0.162)
In-State Tuition	0.986	1.128	1.083
	(0.086)	(0.104)	(0.146)
Private Tuition	0.887	0.924	0.961
	(0.086)	(0.098)	(0.152)
Includes Marital & Children status as control variables	yes	yes	yes
Observations	3092	3092	3092

Exponentiated coefficients; Standard errors in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

D. MENTOR PERFORMANCE EFFECT MODEL

1. Model Specification

To answer our second research question, we add variables that categorize mentor performance by both specified time periods within their career (Before MOI, During MOI, Cumulative) and using the average Relative Value during the specified time-period to

signify performance level. Due to most mentees having experienced more than one mentor, we include in our analysis different mentor categories (First, Last, Longest) to explore how the relationship between a mentee's first, last, and longest mentor may have affected retention decisions differently. It should be noted, for those mentees who only experienced one mentor during their time in the NROTC program, we classify this mentor as being the 'longest' and exclude these mentees from the models examining first and last mentors.

The base category for each performance model will be officers with average FITREP performance. In determining if and what predictive affect a mentor's performance may have on mentee retention decisions, the Marine Corps may find it necessary to adjust its selection process and duration of tour for mentors. Table 14 presents the logit model specifications used to examine retention across each different career period by mentor type.

Table 14. Mentor Performance Model Specification

Retention Milestone = *f* (Gender, Race, MOS Category, Marital status, # children, Scholarship length, Tuition type, Performance Level$_{mentor_type,\ career_period}$)
Base Group by Performance Level: - Before_MOI_Avg_Perf - During_MOI_Avg_Perf - Career_Avg_Perf Mentor Types: - First contact mentor - Last contact mentor - Longest contact mentor

2. Hypothesized Effects of the Explanatory Variables

For our performance models, we anticipate finding that those mentors who are classified as being above average performers at any of the examined career periods will result in predicting higher probabilities of retention for mentees at the 5- and 7-year milestones, following that commonly held notion that talent attracts talent. Conversely, we think a mentor's performance will have a negligible impact at the 10-year milestone due to diminishing returns of a mentoring relationship over time. (Kram, 1983). Further, we believe that the performance of those classified as being a mentee's first or longest mentor

will be associated with an increased positive impact on retention when compared to the mentor that had last contact with the mentee.

3. Model Limitations and Assumptions

It can be expected that no study is perfect and there can be anomalies in the data, such that assumptions are required. Our study is no different. Specifically, with our performance models, we find it necessary to clarify three areas before presenting the results.

First, we do not calculate a mentor's 'During MOI' performance by only averaging those FITREPs that coincide with a given mentee's school attendance period, but instead capture their FITREP average for the entire time they served as an MOI and associate that with any mentee that attended the NROTC program during this time. Thus, in our analysis, there are occasions where a mentor's total performance as an MOI is assumed to have affected a mentee, despite not having a complete overlap. For example, if an MOI mentors a midshipman for one year and then that mentee graduates, and mentor serves 2 more years as a MOI, the average of the mentor's entire performance as an MOI is being contributed to the mentee even though the mentee was no longer in the program for the mentor's 2nd/ 3rd years. We feel confident in attributing a mentor's performance to a mentee they held a relationship with, because we believe it is highly unlikely for a mentor's performance to drastically change. Thus, if a mentor had average performance in the first year of holding the MOI billet, it can reasonably be assumed that they will continue to be an average performer throughout the tour therefore the impact to the mentee's retention decisions would be relatively stable.

Second, we attempt to measure a mentor's performance from before they served as a MOI by taking the average relative value of all observed FITREPs since they commissioned. However, because the Marine Corps changed FITREPs systems in 1999 (Clemens et. al., 2012). and we only have data from the newer system, we are unable to calculate an average for all mentors in the same way. We instead use as many 'pre-MOI' FITREPs we have for a given mentor to calculate an average. Like what was described

above, we believe that an officer's performance will be relatively stable throughout their careers, and thus an average will not be drastically affected.

Third, because of the period for our study, some of the mentors were commissioned prior to 1999 and thus have FITREPs conducted using both new and old FITREP systems. Clemens et. al. (2012) points out, "beginning RS profiles do not look the same as mature ones" and that there is a "tendency for marks to rise—a tendency that diminishes as the profile matures" (Clemens et. al., 2012). As the new FITREP system was implemented, we believe that it took a few years for RSs to adjust and learn how to accurately manage their profiles, resulting in some of our mentors receiving lower Relative values than what was indicative of their performance which would skew our results. To verify this theory, we conducted our performance regression by mentee cohort commissioning year for the longest mentor and compared the results. As shown in Table 15, those longest mentors with below average FITREPs were found to significantly predict 5-year retention for mentees who commissioned in 2000 by 2407%, despite only having 35 observations. We believe this effect to be an outlier in the data and thus choose to remove all mentees commissioned in 2000 to have a more normally distributed sample.

Table 15. Odds Ratio for Longest-Mentor's Performance Prior to MOI Billet Effect On Officer Retention

Ret_5yrs	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
Mentee Commission Year	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14
Below_Avg Performance	25.079*	0.314	1.642	0.990	1.347	4.846	2.540	0.241	3.271	1.000	1.288	1.000	1.000	1.032	1.000
	(38.293)	(0.321)	(1.049)	(0.611)	(0.864)	(5.619)	(1.993)	(0.290)	(5.440)	(.)	(1.810)	(.)	(.)	(1.525)	(.)
Above_Avg Performance	6.938e+08	7.443	0.911	0.338	0.925	1.320	2.611	0.869	2.098	1.037	2.044*	1.057	1.745	1.682	1.690
	(1.334e+12)	(13.213)	(0.570)	(0.213)	(0.455)	(0.697)	(1.566)	(0.521)	(1.309)	(0.526)	(0.662)	(0.334)	(0.583)	(0.632)	(1.542)
Observations	35	56	89	113	114	135	150	103	118	161	218	273	218	219	158

Exponentiated coefficients; Standard errors in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$
Mentee commission year: 00 = 2000, 01= 2001, etc.

4. Model Results

The odds ratio effects of the independent variables with significant results for both 5- and 7-year retention milestones are presented in Table 16. We conduct models that capture before-MOI, during-MOI, and the cumulative of before and during MOI career periods for mentors but find no significant differences among them. Thus, we present in Table 16 only those models that capture before-MOI performance, as this is one of the factors the Marine Corps selection boards use when choosing officers to become MOIs.

The most shocking finding is that our models indicate a significant positive relationship between those mentors who receive below average FITREPs before holding the MOI billet and retention of their mentees to both 5- and 7-year retention milestones. In the 5-year retention model, the longest mentor with below average FITREPs is found to increase the odds of retention by 99.4%. However, in the 7-year model, significance for below average FITREPs increases to above 100%. Longest mentors increase odds of retention to 136%, first mentors to 120%, and last mentors to 131%. Almost equally shocking, is the finding that above-average performing mentors, who served either as the longest or first mentor, have a negative effect on the odds of retention for mentees at the 7-year milestone, at 35% and 23% respectively. As mentioned earlier in the model assumptions section, we believe the positive findings associated with below average FITREPs are partly the cause of the implementation of the new FITREP system in 1999.

We also find an increase in significance for those mentees who received 2- and 3-year scholarships, in comparison with our base NROTC-only model. In the previous NROTC-only model, a 3-year scholarship was found to increase the odds of retention at 5-years by 39.6%, whereas in our performance model for the same retention milestone, the odds increase to an average of 53% for all mentor types. Additionally, for 2-year scholarship recipients, odds of 5-year retention increased from 55% to 60.3% between the NROTC-only and performance models.

With regard to a mentor's MOS category, we find in the 5-year retention model 39.3% increased odds for those holding a Combat-related MOS and being a first mentor, which then increases to 80.7% odds of retention to the 7-year milestone. The combat-related MOS is also

significant for the longest mentor at the 7-year milestone, with an increase in odds of retention of 50.1% as compared to those holding service-support MOSs. Additionally, aviation-related MOS mentors show slightly lower odds of increased retention with first mentors increasing odds to 5-year retention by 36.9% and longest mentors increasing odds to 7-year retention by 49.4%.

Each of these performance models (columns 1–6) in Table16, show continued significance in the marital and children status variables, of which the coefficients can be seen in Appendix D. Additionally, we remove mentee MOS and tuition type from all these models as they individually had no significance, nor effected the significance of other variables.

Table 16. Odds Ratio for Before MOI Billet Performance by Mentor Type Effects on Retention

	Ret_5yrs			Ret_7yrs		
	(1) Longest Mentor	(2) First Mentor	(3) Last Mentor	(4) Longest Mentor	(5) First Mentor	(6) Last Mentor
Mentee American Indian/ Alaska Native/Pacific Islander	2.924*	3.047	2.789	0.629	0.701	0.703
	(1.506)	(2.040)	(1.854)	(0.322)	(0.468)	(0.446)
Mentee Asian	1.631	1.401	1.488	2.037**	2.664**	2.595**
	(0.427)	(0.434)	(0.462)	(0.538)	(0.843)	(0.818)
2year Scholarship	1.603***	1.360	1.329	1.345*	1.223	1.162
	(0.215)	(0.286)	(0.279)	(0.190)	(0.277)	(0.259)
3year Scholarship	1.561***	1.532**	1.508**	1.224	1.082	1.067
	(0.162)	(0.199)	(0.196)	(0.137)	(0.155)	(0.151)
Mentor Combat Arms	1.154	1.393**	1.173	1.501***	1.807***	1.155
	(0.112)	(0.164)	(0.139)	(0.158)	(0.236)	(0.150)
Mentor Aviation	0.995	1.369*	0.950	1.494**	1.204	0.811
	(0.119)	(0.198)	(0.141)	(0.191)	(0.194)	(0.137)
Below_Avg Performance	1.994***	1.384	1.904*	2.361***	2.202***	2.317**
	(0.377)	(0.255)	(0.550)	(0.425)	(0.411)	(0.636)
Above_Avg Performance	0.977	0.820	0.810	0.650***	0.770*	0.818
	(0.089)	(0.095)	(0.090)	(0.067)	(0.103)	(0.102)
Includes Marital & Children status as control variables	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2462	1633	1633	2462	1633	1633

Exponentiated coefficients; Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

E. SHARED ATTRIBUTE RETENTION MODEL

1. Model Specification

To examine how shared attributes between a mentee and mentor may predict retention decisions, we add variables that account for the shared attributes of gender, race, and commissioning source, as well as terms indicating race categories for both mentee and mentor (White, Non-white). Similar to the performance models, we conduct a sensitivity analysis to examine whether there are differences by mentor type. The literature suggests there is a relationship between shared attributes and career outcomes (Blake-Beard et. al., 2011; Rockoff, 2008). If this correlation is found in our study and the Marine Corps desires to increase retention of minority populations, it may want to adjust its selection process for MOIs to more closely match the demographic breakdown of its mentee (midshipmen) population. Table 17 presents the logit model specifications used to analyze the predictability of shared attributes by mentor type on retention outcomes.

Table 17. Shared Attributes Model Specification

Retention Milestone = f (Gender, Race, MOS Category, Marital status, # children, Scholarship length, Tuition type, Shared Attributes$_{mentor_type}$, Shared Race Attributes$_{mentor_type}$)
Shared Attribute Variables - Shared_gender - Shared_race (minority vs majority) - Shared_comm_src (NROTC) Shared Race Variables - White Mentee & White Mentor - White Mentee & Non-white Mentor - Non-white Mentee & White Mentor - Non-white Mentee & Non-white Mentor Mentor Types: - First contact mentor - Last contact mentor - Longest contact mentor

2. Hypothesized Effects of the Explanatory Variables

For our shared attribute models, we anticipate finding that regardless of type of mentor (first, last, longest), there will be a positive prediction on retention at the 5- and 7-year milestones if attributes of gender or race are shared between mentee and mentor. Further, we believe these findings will be continued when race is interacted with non-minority, as this would coincide with findings in the literature. Though having experienced the same commissioning source may help the mentor connect with and relate better to the mentee, we believe its predictability on mentee retention at any milestone will be negligible. We do not expect to have significant findings at the 10-year retention milestone, as the effects of a mentor are not expected to be long lasting (Kram, 1983).

3. Model Results

The odds ratio effects of the independent variables for both 5- and 7-year retention milestones for the shared-attributes models are presented in Table 18. The only finding that is significant is for a white mentee when their last mentor was non-white. This racial combination decreased the odds of retention for the 5-year milestone by 31.1%. Our hypothesis of having a shared gender proved false, as there was no significance found. Additionally, our hypothesis of a mentor and mentee sharing the same commissioning source was found to be true, in that we find there to be no statistically significant estimates.

Table 18. Odds Ratio for Shared Attributes by Mentor Type Effects on Retention

	Ret_5yr			Ret_7yr		
	(1) Longest Mentor	(2) First Mentor	(3) Last Mentor	(4) Longest Mentor	(5) First Mentor	(6) Last Mentor
Shared Gender	1.136	1.173	0.934	1.109	1.254	0.831
	(0.133)	(0.177)	(0.136)	(0.139)	(0.212)	(0.128)
Shared Commission Source	0.927	1.042	0.943	0.972	1.214	0.758
	(0.089)	(0.127)	(0.125)	(0.099)	(0.156)	(0.112)
Non-white Mentee & White Mentor	1.340	1.248	1.305	1.172	1.293	1.292
	(0.210)	(0.236)	(0.255)	(0.184)	(0.250)	(0.256)
White Mentee & Non-white Mentor	0.797	0.922	0.699*	0.940	0.820	1.016
	(0.100)	(0.139)	(0.101)	(0.127)	(0.140)	(0.159)
Non-white Mentee & Non-white Mentor	0.863	1.207	0.668	1.122	0.601	0.863
	(0.288)	(0.642)	(0.296)	(0.391)	(0.391)	(0.423)
Observations	2462	1637	1637	2462	1637	1637

Exponentiated coefficients; Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

F. SUMMARY

This chapter presented the multivariate logistic models, the hypothesized effects of explanatory variables, and model results using the odds ratio methodology. This study first examined how a series of explanatory variables predicted retention at the 5-, 7-, and 10-year milestones, and compared the results with those from previous studies. Significant findings included those for marital status, child status, and commissioning source, which were concordant with previous studies (Ergun, 2003; O'Brien, 2002).

Next, we limited our scope to only those officers who attended a NROTC program and included variables for scholarship length and tuition type. Marital and child status continue to be the most significant predictors of retention for both 5- and 7-year milestones. We find some significance in the race and gender explanatory variables, but not enough to make policy recommendations from. We also found some significance in the scholarship

variables, with NROTC officers holding 2- and 3-year scholarships being slightly more likely to retain when compared to 4-year scholarship recipients.

In the performance regression models, we add variables that account for a mentor's FITREP performance before and during their time as MOIs, as well as a combination of both time periods. A separate model is conducted for each type of mentor to examine if there are differing effects on mentees. The most significant, and rather shocking finding, is that mentors who were below average performers, were found to have a positive predictive effect on whether a mentee was retained at the 5- and 7-year retention milestones. Similarly, and just as shocking, a mentee's longest mentor who had above-average performance, was found to have a negative effect on retention to 7-years. These models also showed slight increase in retention odds for those mentees who received 2- and 3-year scholarships. Marital and child status continued to be significant predictive factors as well.

Finally, in the shared attributes model, there was little to no significance found in any of the regressed variables, apart from marital and child status. Several models were run that both included and excluded demographic variables of both mentee and mentor, but neither had significant effects.

The next and final chapter of this study includes our conclusions from our model results, policy recommendations for the Marine Corps to consider, as well as possibilities for future research.

VI. CONCLUSION AND RECOMMENDATIONS

To maintain competitiveness in the labor market and continue to be the leading fighting force of the nation, the Marine Corps must overcome its current gaps in talent and experience by reducing disparities in proportions of a diverse populations and adjusting policies that affect retention decisions. The Marine Corps has a unique opportunity to leverage its seasoned officers to serve as teachers, coaches, and mentors to junior officers as a means of influencing career outcomes.

The purpose of this thesis was to analyze the effects of mentorship on a mentee's retention decisions, specifically examining the mentor's performance and the shared attributes between mentor and mentee. There is a significant lack of literature on the effects of mentorship in the military, despite its implementation and value being stressed by leaders and publications. This thesis contributes to military mentorship literature by investigating the role of mentorship on the desired career outcome of retention at different milestones. This chapter provides a statistical interpretation of the results from Chapter V in terms of how they answer the study's research questions and provides policy recommendations and avenues for further research.

A. CONCLUSIONS

In this section, we review our models used in our analysis and summarize the main on predicting retention at the 5-, 7-, and 10-year career milestones. We also discuss possible reasons as to why these explanatory variables were found to be positive or negative predictors of retention behavior.

1. What Factors Affect an Officer's Retention?

The first research question we examined aimed to identify the factors that apply to all Marine officers serve as significant predictors of retention at the 5-, 7-, and 10-year milestones. We find that marital status, whether being married or divorced, in comparison to being single, and having children are both highly significant predictive factors. These findings are in line with those identified by Ergun (2003) and O'Brien (2002). As O'Brien

(2002) surmised, "it is possible that married officers may be more career oriented since they are not only responsible for themselves, but also for a family" (O'Brien, 2002). O'Brien's theory can also be applied to having children, as now there is incentive to have a stable career and income.

Additionally, we find that different commissioning sources, in comparison with the USNA, having varied significant effects which are also in line with Ergun (2003) and O'Brien's (2002) findings. Those officers who access from either PLC or OCC programs are found to have lower retention rates, which may be attributed to shorter duration of military indoctrination training than what is received by USNA and NROTC graduates. While our findings also indicate the NROTC officers are predicted to have lower retention rates at the 5-year milestone, this may be partly attributed to the fact that USNA graduates are required to serve 5-year contracts upon graduation, whereas NROTC graduates only must serve the customary 4-years and thus have a retention choice that this milestone (USNA, 2020).

The findings from this model are evidence to suggest, due to their concurrence with other studies, that the population in our study is an accurate representation of the Marine Corps officer population.

2. What Factors Affect Retention of an Officer from a NROTC Program?

Looking further into the factors that affect retention decisions, we narrowed our population to just those officers who commissioned from a NROTC program to see if there were any additional predictive factors of retention. We added controls to this model to account for the length of scholarship a given midshipman received and tuition type. Our models continue to show that marital and child status are positive predictors of retention across all measured milestones, and thus our reasoning mentioned in the previous section remains applicable.

We also find that NROTC recipients of scholarship length of 2- and 3-years are more likely to retain, on average, at the 5- and 7-year milestones when compared with 4-year scholarship recipients. One possible explanation could be that while a 4-year scholarship recipient is awarded based on their high-school performance and merits, those

officers awarded 2- and 3-year scholarships must also work with the MOI/NROTC program and prove themselves to be competitive in the military aspect as well as in addition to achievement in their college record which further highlights their dedication. We believe the 2- and 3-year scholarship recipients may be more serious about joining the Marine Corps and have had to work harder to get accepted, resulting in longer retention through their first few tours.

3. Does a Mentor's Career Performance Affect Retention Decisions of the Mentee?

One of the focuses of this study was aimed to identify whether the performance of an officer serving as a mentor would influence the retention decisions of officers they mentored. We find, surprisingly, that officers mentored by below-average performing mentors, according to Marine Corps standards, are more likely to retain than those with mentors with average performance. Further, NROTC officers with above-average performing mentors are less likely to retain. We believe this outcome is caused by two, somewhat opposing factors. First, as mentioned in the performance model assumption section in the previous chapter, when the new FITREP system was adopted in 1999, it took several years for RSs to understand the system and learn how to properly manage their FITREP marking profiles. As a result, there is a higher number of below average FITREPs for mentors during 1998–2004 as compared to 2005–2015, which skews the predictive power of the below-average variable. This reasoning was highly evident when we included mentees from 2000 in our initial model and found the odds of retention for mentees across all retention milestones to be over 100%. Second, based on first-hand experience and anecdotal evidence, when a mentee has a low-performing mentor, it may serve as a point of motivation to out-perform and out-last that individual. Though at this point in their career, a mentee has no experience with performance requirements of an active-duty officer, nor is given any information on their mentor's performance history, there may be intangible and intrinsic indicators their mentor is in fact a below-average performer. Since the mentor may be the first active-duty officer a mentee meets, he/she acts as a point of comparison for the mentee as they start their careers. Though challenging to quantify, the Marine Corps is a highly competitive organization, so it stands to reason that an officer

would seek to out-perform and out-last another who they perceive to be lesser, in this case the mentee choosing to retain for longer. Conversely, if a mentee perceives their mentor to be a proverbial water-walker, they may feel inadequate in comparison, thus choosing to attrite at earlier milestones.

4. Does Having Shared Attributes Between Mentors and Mentee Serve as Predictive Factors for Retention?

The second focus of this study was to identify whether a mentee and mentor sharing attributes such as gender, race, and commissioning source would have any impact on the retention decisions of the mentee. Our results showed there to be no conclusive evidence from our data to suggest such a correlation. One reason for the lack of correlation for gender and race categories could be that our sample did not include large enough numbers of female and minority races to have any significance over the male and white comparison groups. Similarly, we do not believe there was enough variation in commissioning sources for mentors for us to see an impact. Though we gathered data from as far back as NETC collected succinct files, our sample lacks the depth needed to draw conclusions about the impact of shared attributes between mentor and mentee.

The literature we reviewed on predicting retention and mentorship effects were critical in informing our hypotheses about our model results. However, many of our findings contrasted with the literature. Payne and Huffman (2005) and Viator and Scandura (1991) found connections between mentorship and positive career outcomes such as retention, job performance and satisfaction. Similarly, Lyle and Smith (2014) found that an above-average performing mentor has a positive impact on career outcomes of their mentees. Our study found that a mentor's below-average performance was a positive predictor of retention outcomes and that the longest-serving mentor with above-average performance was associated with predicting negative retention rates.

Rockoff (2008) found that shared attributes between mentors and mentees resulted in positive correlations with career outcomes, such as retention. As noted in the results section of this study, we found there to be no evidence of such a correlation within our sample when race, gender, and commissioning source were examined. Our findings on

shared attributes did, however, coincide with those of Blake-Beard at. Al. (2011), who did not find a correlation between shared attributes of STEM students and their respective mentors in a school setting.

For both focuses of our study; performance and shared attribute effects, we point to the many differences between our study and those in the literature as the cause for such different results. Most of the studies examined in the literature review had much larger samples than ours and examined career retention outcomes relative to non-military institutions. Of the studies that did examine military populations, both Lyle and Smith (2014) and Payne and Huffman (2005) examined career outcomes of officers who had already been indoctrinated into the military, thus the effects of an initial mentor, such as the MOI we are studying, is not considered.

B. RECOMMENDATIONS

Based on the results presented in the previous chapter, this section proposes some policy recommendations for both changes and continuations. These recommendations are intended to provide direction to the Marine Corps with regards to their selection process for MOIs, to ensure those officers who may be correlated with positive outcomes for those they mentor are selected to the mentor billets. Additionally, we make a recommendation to help streamline the process for receiving data, serving to benefit students, data-mangers, as well as Marine Corps interests.

Our first recommendation is that the Marine Corps continues to select officers to MOI billets that range in demographic (gender, race, commissioning source) attributes. Our study showed no evidence suggesting that one or more of these categories had significant impacts on the retention decisions of the mentees. Therefore, we cannot with any confidence suggest that a different mix of demographics would produce any significant results.

Our second recommendation is provided with some hesitation. Due to the findings from our performance model, we believe there may be some validity in selecting a larger proportion of officers categorized as below-average performers to MOI billets, to increase retention of newly commissioned NROTC officers. However, this recommendation comes

with some caveats. First, further research would need to be conducted on the benefits of using below-average performers as mentors, to ensure the findings in our study are not just an anomaly. We recognize though that the goal of a FITREP is to provide a comprehensive evaluation of an officer's performance in a given billet, which may not be indicative of how they would perform in a mentorship capacity. Therefore, it may be more beneficial to address the evaluation system and include measurements that will account for personality and skill requirements necessary for success as a mentor. Second, if the Marine Corps' intent for a MOI tour is to have a competitive selection process and to be a reward for an officer's hard work rather than a billet that any officer can serve in, they should not heed our recommendation. However, if there is interest in more evenly distributing the quality of officers across MOI billets, our recommendation would stand. We believe that many Marine Corps officers are intrinsically motivated by performing exceedingly better than those they perceive to be weaker performers. Thus, by having some lower-performing officers serve in MOI billets, their mentees may be motivated to out-perform and retain longer than them. We recognize this is unproved reverse logic but could have valid results.

Our final recommendation relates to the data collection process required to conduct such in-depth analysis on manpower data. Due to the number of research projects conducted at Naval Postgraduate School with regards to manpower topics, the Marine Corps could benefit from providing ready access to major manpower data sources. As a result, more projects could be conducted in the classroom, students may tackle more in-depth thesis questions since the time to receive their data would be significantly reduced, and the workload of current data-mangers would be reduced allowing them to focus on more relevant issues.

C. FURTHER RESEARCH

Our study provides contributions to the literature on mentorship in the military, but by no means was exhaustive of all possible research questions and topics. As such, we provide the following recommendations for future research based on three categories: expansions to our study, additional population scopes, and different career outcome

metrics. Through exploration of these topics, the Marine Corps will gain a clearer sight-picture of the role and effects of officer mentorship on junior officers.

We have two suggestions for continuing research on our study's topic, which was focused on the NROTC population. First, we recommend including a longitudinal qualitative study of NROTC graduates across multiple commissioning years to gain insight on their perceptions of and potentially associated effects of their MOI by conducting surveys at multiple career milestones. Though a study of this nature would certainly have some subjectivity on the part of the survey respondents, it could reinforce those results found from quantitative studies such as this one. Second, we believe the experiences of prospective officers who attend military colleges are different than typical NROTC programs and may have retention outcomes more similar to those of service academies. Therefore, a study that compares retention rates between these three different school experiences could not only be significant but also affect accession allocation decisions.

We recognize that officers commissioned from NROTC programs do not provide a full representation of the Marine Corps officer population and retention decisions and therefore suggest that other commissioning programs such as the USNA, PLC, and OCC be examined in a similar manner to our study. However, a challenge with doing this lies in the fact that MOI equivalent billet holders in the other commissioning sources (OSO= PLC & OCC, Company Officer = USNA) do not have consistent amounts and types of contact with mentees, like MOIs do. Future studies into these programs would require detailed data on the amount of time mentors spend with mentees, which may not exist. If these studies were conducted and compared against our results, the Marine Corps may find it necessary to select officers to fill mentor billets based on different criteria by commissioning source.

Finally, we recommend future studies examine different career metrics such as a mentee's performance and promotability resulting from a mentor's influence. Studies by Ergun (2003), O' Brien (2002), Stolzenberg (2017), among others, have examined these outcomes but did not analyze correlations with the influence of a mentor. Findings from studies that use these other career metrics as outcome variables could provide results which may lead to the Marine Corps adjusting its mentor selection criteria to achieve desired talent management goals.

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APPENDIX A. FITNESS REPORT

USMC FITNESS REPORT (1610)
NAVMC 10835A (Rev. 1-01)(P
PREVIOUS EDITIONS WILL NOT BE USED
FOUO - Privacy sensitive if filled in

DO NOT STAPLE
THIS FORM

COMMANDANT'S GUIDANCE

The completed fitness report is the most important information component in manpower management. It is the primary means of evaluating a Marine's performance and is the Commandant's primary tool for the selection of personnel for promotion, augmentation, resident schooling, command, and duty assignments. Therefore, the completion of this report is one of an officer's most critical responsibilities. Inherent in this duty is the commitment of each Reporting Senior and Reviewing Officer to ensure the integrity of the system by giving close attention to accurate marking and timely reporting. Every officer serves a role in the scrupulous maintenance of this evaluation system, ultimately important to both the individual and the Marine Corps. Inflationary markings only serve to dilute the actual value of each report. Reviewing Officers will not concur with inflated reports.

A. ADMINISTRATIVE INFORMATION

1. Marine Reported On:
a. Last Name | b. First Name | c. MI | d.ID | e. Grade | f. DOR | g. PMOS | h. BILMOS

2. Organization:
a. MCC | b. RUC | c. Unit Description

3. Occasion and Period Covered:
a. OCC | b. From | To | c. Type

4. Duty Assignment (descriptive title):

5. Special Case:
a. Adverse ☐ b. Not Observed ☐ c. Extended ☐

6. Marine Subject Of:
a. Commendatory Material ☐ b. Derogatory Material ☐ c. Disciplinary Action ☐

7. Recommended For Promotion:
a. Yes ☐ b. No ☐ c. N/A ☐

8. Special Information:
a. QUAL | d. HT(in.) | g. Reserve Component
b. PFT | e. WT | h. Status
c. CFT | f. Body Fat | i. Future Use

9. Duty Preference:
a. Code | b. Descriptive Title
1st
2nd
3rd

10. Reporting Senior:
a. Last Name | b. Init | c. Service | d.ID | e. Grade | f. Duty Assignment

11. Reviewing Officer:
a. Last Name | b. Init | c. Service | d.ID | e. Grade | f. Duty Assignment

B. BILLET DESCRIPTION

C. BILLET ACCOMPLISHMENTS

1. Marine Reported On: a. Last Name	b. First Name	c. MI	d. ID	2. Occasion and Period Covered: a. OCC	b. From	To

D. MISSION ACCOMPLISHMENT

1. PERFORMANCE. Results achieved during the reporting period. How well those duties inherent to a Marine's billet, plus all additional duties, formally and informally assigned, were carried out. Reflects a Marine's aptitude, competence, and commitment to the unit's success above personal reward. Indicators are time and resource management, task prioritization, and tenacity to achieve positive ends consistently.

ADV							N/O
	Meets requirements of billet and additional duties. Aptitude, commitment, and competence meet expectations. Results maintain status quo.		Consistently produces quality results while measurably improving unit performance. Habitually makes effective use of time and resources; improves billet procedures and products. Positive impact extends beyond billet expectations.		Results far surpass expectations. Recognizes and exploits new resources; creates opportunities. Emulated; sought after as an expert with influence beyond unit. Impact significant; innovative approaches to problems produce significant gains in quality and efficiency.		

A	B	C	D	E	F	G	H
☐	☐	☐	☐	☐	☐	☐	☐

2. PROFICIENCY. Demonstrates technical knowledge and practical skill in the execution of the Marine's overall duties. Combines training, education and experience. Translates skills into actions which contribute to accomplishing tasks and missions. Imparts knowledge to others. Grade dependent.

ADV							N/O
	Competent. Possesses the requisite range of skills and knowledge commensurate with grade and experience. Understands and articulates basic functions related to mission accomplishment.		Demonstrates mastery of all required skills. Expertise, education and experience consistently enhance mission accomplishment. Innovative troubleshooter and problem solver. Effectively imparts skills to subordinates.		True expert in field. Knowledge and skills impact far beyond those of peers. Translates broad-based education and experience into forward thinking, innovative actions. Makes immeasurable impact on mission accomplishment. Peerless teacher, selflessly imparts expertise to subordinates, peers, and seniors.		

A	B	C	D	E	F	G	H
☐	☐	☐	☐	☐	☐	☐	☐

JUSTIFICATION:

E. INDIVIDUAL CHARACTER

1. COURAGE. Moral or physical strength to overcome danger, fear, difficulty or anxiety. Personal acceptance of responsibility and accountability, placing conscience over competing interests regardless of consequences. Conscious, overriding decision to risk bodily harm or death to accomplish the mission or save others. The will to persevere despite uncertainty.

ADV							N/O
	Demonstrates inner strength and acceptance of responsibility commensurate with scope of duties and experience. Willing to face moral or physical challenges in pursuit of mission accomplishment.		Guided by conscience in all actions. Proven ability to overcome danger, fear, difficulty or anxiety. Exhibits bravery in the face of adversity and uncertainty. Not deterred by morally difficult situations or hazardous responsibilities.		Uncommon bravery and capacity to overcome obstacles and inspire others in the face of moral dilemma or life-threatening danger. Demonstrated under the most adverse conditions. Selfless. Always places conscience over competing interests regardless of physical or personal consequences.		

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☐	☐	☐	☐	☐	☐	☐	☐

2. EFFECTIVENESS UNDER STRESS. Thinking, functioning and leading effectively under conditions of physical and/or mental pressure. Maintaining composure appropriate for the situation, while displaying steady purpose of action, enabling one to inspire others while continuing to lead under adverse conditions. Physical and emotional strength, resilience and endurance are elements.

ADV							N/O
	Exhibits discipline and stability under pressure. Judgment and effective problem-solving skills are evident.		Consistently demonstrates maturity, mental agility and willpower during periods of adversity. Provides order to chaos through the application of intuition, problem-solving skills, and leadership. Composure reassures others.		Demonstrates seldom-matched presence of mind under the most demanding circumstances. Stabilizes any situation through the resolute and timely application of direction, focus and personal presence.		

A	B	C	D	E	F	G	H
☐	☐	☐	☐	☐	☐	☐	☐

3. INITIATIVE. Action in the absence of specific direction. Seeing what needs to be done and acting without prompting. The instinct to begin a task and follow through energetically on one's own accord. Being creative, proactive and decisive. Transforming opportunity into action.

ADV							N/O
	Demonstrates willingness to take action in the absence of specific direction. Acts commensurate with grade, training and experience.		Self-motivated and action-oriented. Foresight and energy consistently transform opportunity into action. Develops and pursues creative, innovative solutions. Acts without prompting. Self-starter.		Highly motivated and proactive. Displays exceptional awareness of surroundings and environment. Uncanny ability to anticipate mission requirements and quickly formulate original, far-reaching solutions. Always takes decisive, effective action.		

A	B	C	D	E	F	G	H
☐	☐	☐	☐	☐	☐	☐	☐

JUSTIFICATION:

1. Marine Reported On: a. Last Name	b. First Name	c. MI	d. ID	2. Occasion and Period Covered: a. OCC	b. From	To

F. LEADERSHIP

1. LEADING SUBORDINATES. The inseparable relationship between leader and led. The application of leadership principles to provide direction and motivate subordinates. Using authority, persuasion and personality to influence subordinates to accomplish assigned tasks. Sustaining motivation and morale while maximizing subordinates' performance.

ADV	Engaged; provides instructions and directs execution. Seeks to accomplish mission in ways that sustain motivation and morale. Actions contribute to unit effectiveness.		Achieves a highly effective balance between direction and delegation. Effectively tasks subordinates and clearly delineates standards expected. Enhances performance through constructive supervision. Fosters motivation and enhances morale. Builds and sustains teams that successfully meet mission requirements. Encourages initiative and candor among subordinates.		Promotes creativity and energy among subordinates by striking the ideal balance of direction and delegation. Achieves highest levels of performance from subordinates by encouraging individual initiative. Engenders willing subordination, loyalty, and trust that allow subordinates to overcome their perceived limitations. Personal leadership fosters highest levels of motivation and morale, ensuring mission accomplishment even in the most difficult circumstances.		N/O

A	B	C	D	E	F	G	H
☐	☐	☐	☐	☐	☐	☐	☐

2. DEVELOPING SUBORDINATES. Commitment to train, educate, and challenge all Marines regardless of race, religion, ethnic background, or gender. Mentorship. Cultivating professional and personal development of subordinates. Developing team players and esprit de corps. Ability to combine teaching and coaching. Creating an atmosphere tolerant of mistakes in the course of learning.

ADV	Maintains an environment that allows personal and professional development. Ensures subordinates participate in all mandated development programs.		Develops and institutes innovative programs, to include PME, that emphasize personal and professional development of subordinates. Challenges subordinates to exceed their perceived potential thereby enhancing unit morale and effectiveness. Creates an environment where all Marines are confident to learn through trial and error. As a mentor, prepares subordinates for increased responsibilities and duties.		Widely recognized and emulated as a teacher, coach and leader. Any Marine would desire to serve with this Marine because they know they will grow personally and professionally. Subordinate and unit performance far surpassed expected results due to MRO's mentorship and team building talents. Attitude toward subordinate development is infectious, extending beyond the unit.		N/O

A	B	C	D	E	F	G	H
☐	☐	☐	☐	☐	☐	☐	☐

3. SETTING THE EXAMPLE. The most visible facet of leadership: how well a Marine serves as a role model for all others. Personal action demonstrates the highest standards of conduct, ethical behavior, fitness, and appearance. Bearing, demeanor, and self-discipline are elements.

ADV	Maintains Marine Corps standards for appearance, weight, and uniform wear. Sustains required level of physical fitness. Adheres to the tenets of the Marine Corps core values.		Personal conduct on and off duty reflects highest Marine Corps standards of integrity, bearing and appearance. Character is exceptional. Actively seeks self-improvement in wide-ranging areas. Dedication to duty and professional example encourage others' self-improvement efforts.		Model Marine, frequently emulated. Exemplary conduct, behavior, and actions are tone-setting. An inspiration to subordinates, peers, and seniors. Remarkable dedication to improving self and others.		N/O

A	B	C	D	E	F	G	H
☐	☐	☐	☐	☐	☐	☐	☐

4. ENSURING WELL-BEING OF SUBORDINATES. Genuine interest in the well-being of Marines. Efforts enhance subordinates' ability to concentrate/focus on unit mission accomplishment. Concern for family readiness is inherent. The importance placed on welfare of subordinates is based on the belief that Marines take care of their own.

ADV	Deals confidently with issues pertinent to subordinate welfare and recognizes suitable courses of action that support subordinates' well-being. Applies available resources, allowing subordinates to effectively concentrate on the mission.		Instills and/or reinforces a sense of responsibility among junior Marines for themselves and their subordinates. Actively fosters the development of and uses support systems for subordinates which improve their ability to contribute to unit mission accomplishment. Efforts to enhance subordinate welfare improve the unit's ability to accomplish its mission.		Noticeably enhances subordinates well-being, resulting in a measurable increase in unit effectiveness. Maximizes unit and base resources to provide subordinates with the best support available. Proactive approach serves to energize unit members to "take care of their own," thereby correcting potential problems before they can hinder subordinates' effectiveness. Widely recognized for techniques and policies that produce results and build morale. Builds strong family atmosphere. Puts motto *Mission first, Marines always*, into action.		N/O

A	B	C	D	E	F	G	H
☐	☐	☐	☐	☐	☐	☐	☐

5. COMMUNICATION SKILLS. The efficient transmission and receipt of thoughts and ideas that enable and enhance leadership. Equal importance given to listening, speaking, writing, and critical reading skills. Interactive, allowing one to perceive problems and situations, provide concise guidance, and express complex ideas in a form easily understood by everyone. Allows subordinates to ask questions, raise issues and concerns and venture opinions. Contributes to a leader's ability to motivate as well as counsel.

ADV	Skilled in receiving and conveying information. Communicates effectively in performance of duties.		Clearly articulates thoughts and ideas, verbally and in writing. Communication in all forms is accurate, intelligent, concise, and timely. Communicates with clarity and verve, ensuring understanding of intent or purpose. Encourages and considers the contributions of others.		Highly developed facility in verbal communication. Adept in composing written documents of the highest quality. Combines presence and verbal skills which engender confidence and achieve understanding irrespective of the setting, situation, or size of the group addressed. Displays an intuitive sense of when and how to listen.		N/O

A	B	C	D	E	F	G	H
☐	☐	☐	☐	☐	☐	☐	☐

JUSTIFICATION:

1. Marine Reported On: a. Last Name	b. First Name	c. MI	d. ID	2. Occasion and Period Covered: a. OCC	b. From	To

G. INTELLECT AND WISDOM

1.PROFESSIONAL MILITARY EDUCATION (PME). Commitment to intellectual growth in ways beneficial to the Marine Corps. Increases the breadth and depth of warfighting and leadership aptitude. Resources include resident schools; professional qualifications and certification processes; nonresident and other extension courses; civilian educational institution coursework; a personal reading program that includes (but is not limited to) selections from the Commandant's Reading List; participation in discussion groups and military societies; and involvement in learning through new technologies.

ADV						N/O
	Maintains currency in required military skills and related developments. Has completed or is enrolled in appropriate level of PME for grade and level of experience. Recognizes and understands new and creative approaches to service issues. Remains abreast of contemporary concepts and issues.		PME outlook extends beyond MOS and required education. Develops and follows a comprehensive personal program which includes broadened professional reading and/or academic course work; advances new concepts and ideas.		Dedicated to life-long learning. As a result of active and continuous efforts, widely recognized as an intellectual leader in professionally related topics. Makes time for study and takes advantage of all resources and programs. Introduces new and creative approaches to services issues. Engages in a broad spectrum of forums and dialogues.	

A	B	C	D	E	F	G	H
☐	☐	☐	☐	☐	☐	☐	☐

2. DECISION MAKING ABILITY. Viable and timely problem solution. Contributing elements are judgment and decisiveness. Decisions reflect the balance between an optimal solution and a satisfactory, workable solution that generates tempo. Decisions are made within the context of the commander's established intent and the goal of mission accomplishment. Anticipation, mental agility, intuition, and success are inherent.

ADV						N/O
	Makes sound decisions leading to mission accomplishment. Actively collects and evaluates information and weighs alternatives to achieve timely results. Confidently approaches problems; accepts responsibility for outcomes.		Demonstrates mental agility; effectively prioritizes and solves multiple complex problems. Analytical abilities enhanced by experience, education, and intuition. Anticipates problems and implements viable, long-term solutions. Steadfast, willing to make difficult decisions.		Widely recognized and sought after to resolve the most critical, complex problems. Seldom matched analytical and intuitive abilities; accurately foresees unexpected problems and arrives at well-timed decisions despite fog and friction. Completely confident approach to all problems. Masterfully strikes a balance between the desire for perfect knowledge and greater tempo.	

A	B	C	D	E	F	G	H
☐	☐	☐	☐	☐	☐	☐	☐

3. JUDGMENT. The discretionary aspect of decision making. Draws on core values, knowledge, and personal experience to make wise choices. Comprehends the consequences of contemplated courses of action.

ADV						N/O
	Majority of judgments are measured, circumspect, relevant and correct.		Decisions are consistent and uniformly correct, tempered by consideration of their consequences. Able to identify, isolate and assess relevant factors in the decision making process. Opinions sought by others. Subordinates personal interest in favor of impartiality.		Decisions reflect exceptional insight and wisdom beyond this Marine's experience. Counsel sought by all; often an arbiter. Consistent, superior judgment inspires the confidence of seniors.	

A	B	C	D	E	F	G	H
☐	☐	☐	☐	☐	☐	☐	☐

JUSTIFICATION:

H. FULFILLMENT OF EVALUATION RESPONSIBILITIES

1. EVALUATIONS. The extent to which this officer serving as a reporting official conducted, or required others to conduct, accurate, uninflated, and timely evaluations.

ADV						N/O
	Occasionally submitted untimely or administratively incorrect evaluations. As RS, submitted one or more reports that contained inflated markings. As RO, concurred with one or more reports from subordinates that were returned by HQMC for inflated marking.		Prepared uninflated evaluations which were consistently submitted on time. Evaluations accurately described performance and character. Evaluations contained no inflated markings. No reports returned by RO or HQMC for inflated marking. No subordinates' reports returned by HQMC for inflated marking. Few, if any, reports were returned by RO or HQMC for administrative errors. Section Cs were void of superlatives. Justifications were specific, verifiable, substantive, and where possible, quantifiable and supported the markings given.		No reports submitted late. No reports returned by either RO or HQMC for administrative correction or inflated markings. No subordinates' reports returned by HQMC for administrative correction or inflated markings. Returned procedurally or administratively incorrect reports to subordinates for correction. As RO nonconcurred with all inflated reports.	

A	B	C	D	E	F	G	H
☐	☐	☐	☐	☐	☐	☐	☐

JUSTIFICATION:

1. Marine Reported On: a. Last Name | b. First Name | c. MI | d. ID | 2. Occasion and Period Covered: a. OCC | b. From | To

I. DIRECTED AND ADDITIONAL COMMENTS

J. CERTIFICATION

1. I CERTIFY that to the best of my knowledge and belief all entries made hereon are true and without prejudice or partiality and that I have provided a signed copy of this report to the Marine Reported on. (Signature of Reporting Senior) (Date in YYYYMMDD format)

2. I ACKNOWLEDGE the adverse nature of this report and
- ☐ I have no statement to make
- ☐ I have attached a statement

(Signature of Marine Reported On) (Date in YYYYMMDD format)

K. REVIEWING OFFICER COMMENTS

1. OBSERVATION: ☐ Sufficient ☐ Insufficient

2. EVALUATION: ☐ Concur ☐ Do Not Concur

3. COMPARATIVE ASSESSMENT: Provide a comparative assessment of potential by placing an "X" in the appropriate box. In marking the comparison, consider all Marines of this grade whose professional abilities are known to you personally.

DESCRIPTION		COMPARATIVE ASSESSMENT
THE EMINENTLY QUALIFIED MARINE	☐	
ONE OF THE FEW EXCEPTIONALLY QUALIFIED MARINES	☐	
ONE OF THE MANY HIGHLY QUALIFIED PROFESSIONALS WHO FORM THE MAJORITY OF THIS GRADE	☐	
A QUALIFIED MARINE	☐	
UNSATISFACTORY	☐	

4. REVIEWING OFFICER COMMENTS: Amplify your comparative assessment mark; evaluate potential for continued professional development to include: promotion, command, assignment, resident PME, and retention; and put Reporting Senior marks and comments in perspective.

5. I CERTIFY that to the best of my knowledge and belief all entries made hereon are true and without prejudice or partiality. (Signature of Reviewing Officer) (Date in YYYYMMDD format)

6. I ACKNOWLEDGE the adverse nature of this report and
- ☐ I have no statement to make
- ☐ I have attached a statement

(Signature of Marine Reported On) (Date in YYYYMMDD format)

L. ADDENDUM PAGE

ADDENDUM PAGE ATTACHED: ☐ YES

NAVMC 10835E (Rev. 4-03) (P A-PES 5.4.12.0) FOR OFFICIAL USE ONLY - Privacy sensitive when filled in. PAGE 5 OF 5

Figure 6. Marine Corps Fitness Report. Source: HQMC (2018).

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APPENDIX B. MASTER BRIEF SHEET (MBS) FITNESS REPORT LISTING

ADMINISTRATIVE SUMMARY						REPORTING SENIOR MARKINGS																REVIEWING OFFICER MARKINGS								
Grade	OCC	From	Months		Billet Description	Reporting Senior		Per	Pro	Cou	Eff	Ini	Las	Dev	Set	Ens	Co	PME	Dec	Jud	Eval	Reviewing Officer		RO marks - same grade at processing						
BMOS	Type	To	Co	Adv	Command	Promote	Reports	Rpt Avg		RS Avg		RS High		Rpt at High		RV at Proc		Cum RV				Obcer	Concur	RO marks - same grade cumulative						
Capt	GC	19980601	9		Company Commander	LtCol B		F	F	D	E	D	E	E	E	D	D	C	E	E	C	Col T		0/1	0/2	1/3	3/4	2/5	1/6	0/7	0/8
0302	N	19990603			1st Battalion 2d Marines	Yes	13 of 16	4.57		3.62		4.57		1		100.00		100.00				Suff	Yes	0/1	0/2	9/3	12/4	23/5	11/6	3/7	0/8
Maj	AN	19990604	3		Operations Officer	LtCol B		E	E	C	E	E	D	D	E	D	E	C	E	D	D	Col R		0/1	0/2	1/3	2/4	2/5	2/6	0/7	0/8
0302	N	19990601			1st Battalion 2d Marines	Yes	4 of 7	4.38		4.13		4.50		1		98.11		98.11				Suff	Yes	0/1	1/2	2/3	7/4	7/5	6/6	0/7	0/8
Maj	CH	19990601	6		Operations Officer	LtCol B		E	E	D	E	E	D	D	E	D	E	C	E	E	D	Col A		0/1	0/2	1/3	3/4	2/5	1/6	0/7	0/8
0302	N	20000119			1st Battalion 2d Marines	Yes	7 of 7	4.50		4.13		4.50		2		100.00		100.00				Suff	Yes	1/1	0/2	2/3	4/4	17/5	12/6	7/7	1/8
Maj	TR	20000119	3		BN Executive Officer	LtCol S		F	F	D	D	G	F	E	F	D	D	D	D	D	E	Col A		0/1	0/2	1/3	3/4	2/5	2/6	0/7	0/8
0302	N	20000414			1st Battalion 2d Marines	Yes	6 of 14	4.93		4.48		4.93		1		100.00		100.00				Suff	Yes	1/1	0/2	2/3	4/4	17/5	12/6	7/7	1/8

Figure 7. Marine Corps Master Brief Sheet Listing. Source: HQMC (2018).

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APPENDIX C. REPORTING SENIOR (RS)/ REPORTING OFFICIAL (RO) SUMMARY (RELATIVE VALUES)

The following is a summary of the candidate's Reporting Senior and Reviewing Officers markings by grade.

	Reporting Senior							
	At Processing				Cumulative			
Grade	Upper 93.34 - 100	Middle 86.67 - 93.33	Lower 80.00 - 86.66	N/A	Upper 93.34 - 100	Middle 86.67 - 93.33	Lower 80.00 - 86.66	N/A
2NDLT	0.0%	0.0%	0.0%	5	0.0%	0.0%	0.0%	5
1STLT	0.0%	0.0%	100.0%	4	0.0%	0.0%	100.0%	4
CAPT	28.6%	42.9%	28.6%	4	44.4%	44.4%	11.1%	2
Total	25.0%	37.5%	37.5%	13	40.0%	40.0%	20.0%	11

	Reviewing Officer							
	At Processing				Cumulative			
Grade	Above	With	Below	Insuf	Above	With	Below	Insuf
2NDLT	0.0%	0.0%	0.0%	5	0.0%	0.0%	0.0%	5
1STLT	0.0%	100.0%	0.0%	4	0.0%	88.0%	12.0%	4
CAPT	7.9%	34.7%	57.4%	1	8.7%	27.4%	63.9%	1
Total	7.1%	41.6%	51.3%	10	7.8%	33.3%	58.8%	10

Figure 8. Marine Corps RS/RO MBS Relative Values. Source: HQMC (2018).

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APPENDIX D. REGRESSION OUTPUTS

A. ALL-OFFICER

Odds Ratio for All Officer Retention (5/7/10 years) for Commissioning year 2000-2015

	(1) ret_5yrs	(2) ret_7yrs	(3) ret_10yrs
main			
Female	1.041	0.937	0.803
	(0.099)	(0.107)	(0.122)
African American	0.976	1.114	0.869
	(0.140)	(0.173)	(0.160)
Asian	1.405*	1.215	1.477*
	(0.203)	(0.214)	(0.291)
American Indian/Alaska Native/Pacific Islander	1.127	1.226	1.294
	(0.268)	(0.304)	(0.353)
Declined	1.014	1.155	0.880
	(0.142)	(0.175)	(0.159)
NROTC	0.736***	0.836	0.736*
	(0.065)	(0.085)	(0.111)
PLC	0.685***	0.890	1.054
	(0.057)	(0.083)	(0.132)
OCC	0.386***	0.620***	1.449**
	(0.034)	(0.062)	(0.179)
Other	0.307***	0.213***	6.058***
	(0.077)	(0.085)	(1.016)
Combat Arms	1.228**	1.164*	0.910
	(0.079)	(0.083)	(0.080)
Married	1.710***	1.983***	2.766***
	(0.111)	(0.158)	(0.355)
Divorced	2.687***	3.441***	5.945***
	(0.464)	(0.542)	(1.069)
Other	2.237	1.000	2.720
	(1.189)	(.)	(1.583)
Children- No	1.000	1.000	1.000
	(.)	(.)	(.)
Children- Yes	1.742***	2.550***	4.694***
	(0.153)	(0.204)	(0.432)
Observations	8430	11017	13181
R^2			

Exponentiated coefficients; Standard errors in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

B. NROTC-ONLY

Odds Ratio for NROTC Officer Retention (5/7/10 years)

	(1) ret_5yrs	(2) ret_7yrs	(3) ret_10yrs
main			
Mentee Female	1.024	1.109	1.636*
	(0.124)	(0.146)	(0.338)
Mentee African American	0.940	1.223	1.450
	(0.197)	(0.268)	(0.421)
Mentee Asian	1.602*	1.909**	1.694
	(0.344)	(0.409)	(0.618)
Mentee American Indian/Alaska Native/Pacific Islander	1.857	0.551	0.660
	(0.798)	(0.254)	(0.438)
Mentee Declined	1.404	1.171	0.872
	(0.322)	(0.274)	(0.293)
Mentee combat arms	1.155	1.102	1.340*
	(0.097)	(0.098)	(0.175)
Married	1.866***	2.214***	1.070
	(0.153)	(0.208)	(0.197)
Divorced	2.735***	3.882***	2.330**
	(0.637)	(0.768)	(0.677)
Other	0.214	0.503	1.541
	(0.237)	(0.545)	(1.638)
Children- Yes	2.286***	2.715***	47.401***
	(0.289)	(0.280)	(8.606)
1 year Scholarship	1.853	2.411	0.360
	(1.040)	(1.319)	(0.408)
2 year Scholarship	1.550***	1.445**	1.424
	(0.192)	(0.183)	(0.278)
3 year Scholarship	1.396***	1.183	1.116
	(0.130)	(0.117)	(0.162)
In State Tuition	0.986	1.128	1.083
	(0.086)	(0.104)	(0.146)
Private Tuition	0.887	0.924	0.961
	(0.086)	(0.098)	(0.152)
Observations	3092	3092	3092
R^2			

Exponentiated coefficients; Standard errors in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

C. 5- YR MENTOR PERFORMANCE

Odds Ratio for Officer Retention (5 years) Mentor Performance

ret_5yrs	(1) Before Longest	(2) Before First	(3) Before Last	(4) MOI Longest	(5) MOI First	(6) MOI Last	(7) Cumulative Longest	(8) Cumulative First	(9) Cumulative Last
Mentee Female	0.979	0.956	0.949	0.980	0.972	0.954	0.966	0.978	0.940
	(0.136)	(0.171)	(0.169)	(0.136)	(0.173)	(0.170)	(0.134)	(0.175)	(0.168)
Mentee African American	0.796	0.801	0.775	0.793	0.754	0.794	0.796	0.778	0.784
	(0.199)	(0.272)	(0.261)	(0.197)	(0.256)	(0.267)	(0.198)	(0.266)	(0.264)
Mentee Asian	1.631	1.401	1.488	1.644	1.409	1.410	1.646	1.437	1.483
	(0.427)	(0.434)	(0.462)	(0.430)	(0.436)	(0.439)	(0.431)	(0.447)	(0.460)
Mentee American Indian/Alaska Native/Pacific Islander	2.924*	3.047	2.789	2.870*	3.018	2.886	2.957*	3.197	2.909
	(1.506)	(2.040)	(1.854)	(1.473)	(2.015)	(1.929)	(1.524)	(2.148)	(1.936)
Mentee Declined	1.709	1.895	1.874	1.695	1.908	1.833	1.735	1.973	1.863
	(0.483)	(0.661)	(0.650)	(0.478)	(0.664)	(0.637)	(0.489)	(0.691)	(0.646)
Married	1.770***	1.706***	1.717***	1.775***	1.720***	1.705***	1.784***	1.694***	1.726***
	(0.164)	(0.194)	(0.195)	(0.164)	(0.195)	(0.194)	(0.165)	(0.193)	(0.196)
Divorced	2.371***	3.112***	3.053***	2.404***	3.036**	3.069***	2.384***	3.072**	3.002**
	(0.616)	(1.060)	(1.034)	(0.622)	(1.029)	(1.038)	(0.618)	(1.049)	(1.018)
Other	0.280	1.000	1.000	0.336	1.000	1.000	0.338	1.000	1.000
	(0.334)	(.)	(.)	(0.398)	(.)	(.)	(0.400)	(.)	(.)
Children- Yes	2.351***	2.192***	2.199***	2.375***	2.189***	2.201***	2.362***	2.280***	2.207***
	(0.330)	(0.370)	(0.371)	(0.332)	(0.369)	(0.371)	(0.331)	(0.387)	(0.372)
1 year Scholarship	1.611	0.864	1.007	1.613	0.917	0.975	1.580	1.010	0.994
	(0.795)	(0.875)	(1.018)	(0.798)	(0.930)	(0.986)	(0.779)	(1.039)	(1.006)
2 year Scholarship	1.603***	1.360	1.329	1.608***	1.410	1.352	1.599***	1.405	1.358
	(0.215)	(0.286)	(0.279)	(0.215)	(0.297)	(0.284)	(0.214)	(0.297)	(0.286)
3-year Scholarship	1.561***	1.532**	1.508**	1.571***	1.577***	1.500**	1.571***	1.571***	1.535***
	(0.162)	(0.199)	(0.196)	(0.164)	(0.206)	(0.195)	(0.163)	(0.204)	(0.198)
Mentor Combat Arms	1.154	1.393**	1.173	1.167	1.408**	1.175	1.170	1.431**	1.206
	(0.112)	(0.164)	(0.139)	(0.113)	(0.165)	(0.140)	(0.114)	(0.169)	(0.144)
Mentor Aviation	0.995	1.369*	0.950	1.014	1.415*	1.060	1.000	1.287	1.025
	(0.119)	(0.198)	(0.141)	(0.119)	(0.204)	(0.154)	(0.118)	(0.186)	(0.149)
Below Avg Performance	1.994***	1.384	1.904*	1.288	0.920	1.546*	2.126*	0.728	2.708**
	(0.377)	(0.255)	(0.550)	(0.184)	(0.176)	(0.264)	(0.644)	(0.269)	(1.027)
Above Avg Performance	0.977	0.820	0.810	0.928	0.870	1.049	0.953	0.603***	0.968
	(0.089)	(0.095)	(0.090)	(0.088)	(0.099)	(0.125)	(0.096)	(0.078)	(0.119)
Observations	2443	1620	1620	2443	1620	1620	2443	1620	1620
R^2									

Exponentiated coefficients; Standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

D. 7- YR MENTOR PERFORMANCE

Odds Ratio for Officer Retention (7 years) Mentor Performance

	(1) Before Longest	(2) Before First	(3) Before Last	(4) MOI Longest	(5) MOI First	(6) MOI Last	(7) Cumulative Longest	(8) Cumulative First	(9) Cumulative Last
Mentee Female	1.023 (0.158)	1.001 (0.204)	0.999 (0.202)	1.027 (0.158)	1.023 (0.208)	1.000 (0.202)	1.032 (0.159)	1.042 (0.213)	0.993 (0.200)
Mentee African American	0.904 (0.248)	0.811 (0.333)	0.723 (0.293)	0.918 (0.248)	0.696 (0.288)	0.729 (0.295)	0.928 (0.253)	0.738 (0.307)	0.717 (0.290)
Mentee Asian	2.037** (0.538)	2.664** (0.843)	2.595** (0.818)	2.011** (0.529)	2.656** (0.838)	2.503** (0.786)	2.086** (0.550)	2.740** (0.866)	2.594** (0.815)
Mentee American Indian/Alaska Native/Pacific Islander	0.629 (0.322)	0.701 (0.468)	0.703 (0.446)	0.627 (0.317)	0.734 (0.467)	0.681 (0.436)	0.626 (0.322)	0.770 (0.503)	0.710 (0.451)
Mentee Declined	1.430 (0.408)	1.662 (0.583)	1.518 (0.527)	1.401 (0.394)	1.678 (0.587)	1.434 (0.498)	1.405 (0.396)	1.697 (0.601)	1.480 (0.514)
Married	2.439*** (0.266)	2.367*** (0.327)	2.369*** (0.323)	2.388*** (0.258)	2.396*** (0.329)	2.367*** (0.323)	2.433*** (0.264)	2.307*** (0.318)	2.380*** (0.324)
Divorced	4.170*** (0.966)	4.749*** (1.370)	4.771*** (1.351)	4.015*** (0.913)	4.762*** (1.360)	4.758*** (1.344)	4.091*** (0.938)	4.619*** (1.331)	4.706*** (1.329)
Other	0.567 (0.644)	1.000 (.)	1.000 (.)	0.651 (0.732)	1.000 (.)	1.000 (.)	0.686 (0.773)	1.000 (.)	1.000 (.)
Children- Yes	2.628*** (0.306)	2.676*** (0.384)	2.555*** (0.362)	2.696*** (0.311)	2.698*** (0.387)	2.593*** (0.367)	2.662*** (0.308)	2.813*** (0.406)	2.565*** (0.362)
1 year Scholarship	1.793 (0.899)	0.747 (0.899)	0.757 (0.908)	1.923 (0.958)	0.924 (1.110)	0.767 (0.923)	1.816 (0.912)	0.853 (1.058)	0.705 (0.851)
2 year Scholarship	1.345* (0.190)	1.223 (0.277)	1.162 (0.259)	1.379* (0.193)	1.364 (0.307)	1.220 (0.272)	1.376* (0.193)	1.260 (0.285)	1.195 (0.266)
3 year Scholarship	1.224 (0.137)	1.082 (0.155)	1.067 (0.151)	1.272* (0.142)	1.156 (0.166)	1.077 (0.153)	1.246* (0.139)	1.108 (0.159)	1.085 (0.153)
Mentor Combat Arms	1.501*** (0.158)	1.807*** (0.236)	1.155 (0.150)	1.498*** (0.156)	1.846*** (0.239)	1.155 (0.149)	1.527*** (0.160)	1.877*** (0.245)	1.176 (0.153)
Mentor Aviation	1.494** (0.191)	1.204 (0.194)	0.811 (0.137)	1.605*** (0.201)	1.252 (0.201)	0.950 (0.156)	1.550*** (0.196)	1.080 (0.173)	0.902 (0.149)
Below Avg Performance	2.361*** (0.425)	2.202*** (0.411)	2.317** (0.636)	0.896 (0.138)	0.803 (0.176)	1.457* (0.254)	2.268** (0.658)	0.825 (0.353)	2.003* (0.696)
Above Avg Performance	0.650*** (0.067)	0.770* (0.103)	0.818 (0.102)	0.756** (0.079)	0.645*** (0.083)	0.902 (0.121)	0.654*** (0.075)	0.458*** (0.073)	1.039 (0.141)
Observations	2462	1633	1633	2462	1633	1633	2462	1633	1633
R^2									

Exponentiated coefficients; Standard errors in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

APPENDIX E. RELATIVE VALUE CALCULATION

$$\frac{(FITREP\ Avg - RS)}{(RS\ Report\ High - FITREP\ Avg)} * 10 + 90$$

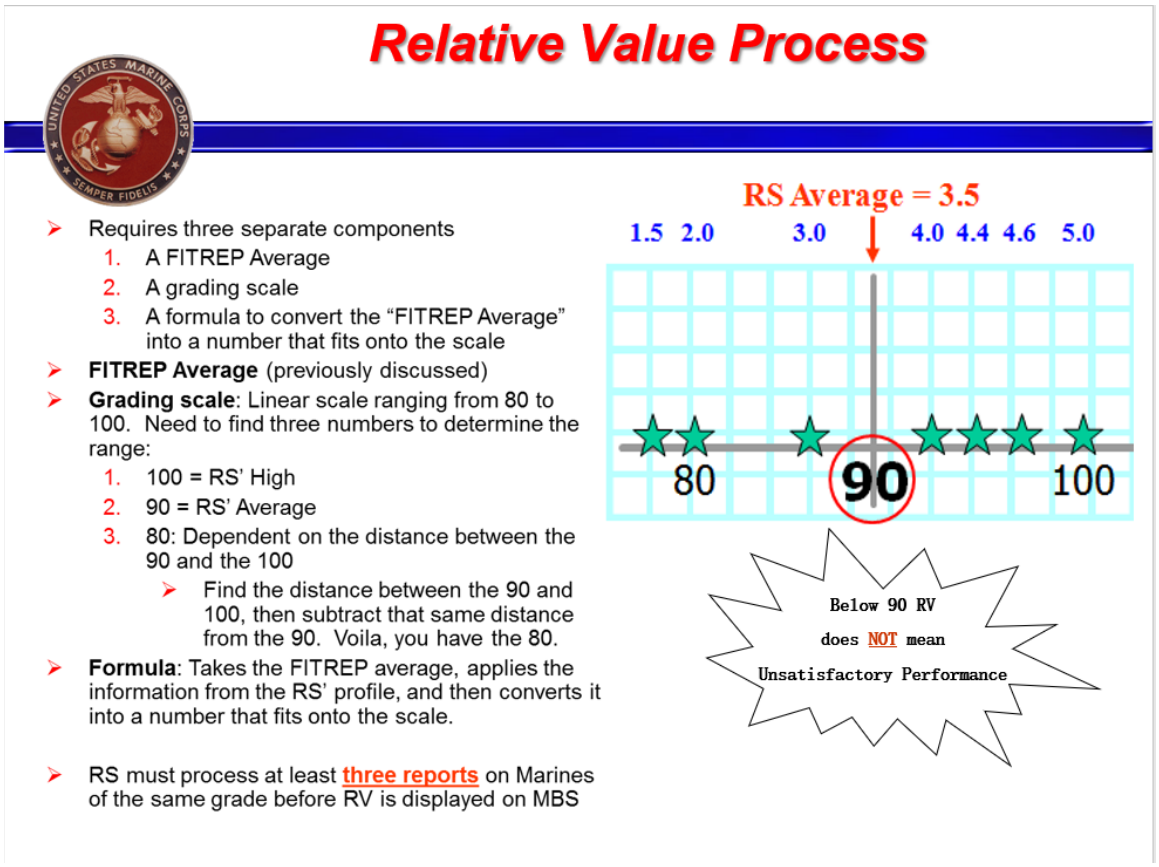

Figure 9. Relative Value Calculation. Source: HQMC (2021b).

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MONITORED COMMAND CODE (MCC) AND SCHOOL LIST

UnitName	MCC
ARIZONA STATE UNIVERSITY	H53
AUBURN UNIVERSITY	H01
BOSTON UNIVERSITY	H03
CARNEGIE MELLON UNIVERSITY	H05
COLLEGE OF THE HOLY CROSS	H22
CORNELL UNIVERSITY	H12
DUKE UNIVERSITY	H16
EMBRY-RIDDLE AERONAUTICAL UNIVERSITY	HAD
FLORIDA A AND M UNIVERSITY	H19
GEORGIA INSTITUTE OF TECHNOLOGY	H18
HAMPTON UNIVERSITY	H59
ILLINOIS INSTITUTE OF TECHNOLOGY	H26
IOWA STATE UNIVERSITY	H30
JACKSONVILLE UNIVERSITY	H31
MAINE MARITIME ACADEMY	H9C
MARQUETTE UNIVERSITY	H36
MASSACHUSETTS INST OF TECHNOLOGY	H37
MIAMI UNIVERSITY	H40
MOREHOUSE COLLEGE	H09
NORFOLK STATE UNIVERSITY	HC4
NORTH CAROLINA STATE UNIVERSITY	H54
NORTHWESTERN UNIVERSITY	H56
NORWICH UNIVERSITY	H57
OLD DOMINION UNIVERSITY	HC5
OREGON STATE UNIVERSITY	H64
PRAIRIE VIEW A AND M UNIVERSITY	H69
PURDUE UNIVERSITY	H72
RENSSELAER POLYTECHNIC INSTITUTE	H74
RICE UNIVERSITY	H76
SAN DIEGO STATE UNIVERSITY	H83
SAVANNAH STATE UNIVERSITY	H79
SOUTHERN UNIVERSITY A AND M COLLEGE	H81
SUNY MARITIME COLLEGE	H67
TEXAS A AND M UNIVERSITY	H89
THE CITADEL	H07
THE GEORGE WASHINGTON UNIVERSITY	H63
THE OHIO STATE UNIVERSITY	H60
THE UNIVERSITY OF ARIZONA	H61
TULANE UNIVERSITY	H90

UnitName	MCC
UNIVERSITY OF CALIFORNIA AT BERKELEY	H04
UNIVERSITY OF CALIFORNIA AT LOS ANGELES	H06
UNIVERSITY OF COLORADO	H08
UNIVERSITY OF FLORIDA	H17
UNIVERSITY OF IDAHO	H24
UNIVERSITY OF ILLINOIS	H28
UNIVERSITY OF KANSAS	H32
UNIVERSITY OF MEMPHIS	H65
UNIVERSITY OF MICHIGAN	H42
UNIVERSITY OF MINNESOTA	H44
UNIVERSITY OF MISSISSIPPI	H46
UNIVERSITY OF MISSOURI	H48
UNIVERSITY OF NEBRASKA	H50
UNIVERSITY OF NEW MEXICO	H52
UNIVERSITY OF NORTH CAROLINA	H54
UNIVERSITY OF NOTRE DAME	H58
UNIVERSITY OF OKLAHOMA	H62
UNIVERSITY OF PENNSYLVANIA	H68
UNIVERSITY OF ROCHESTER	H78
UNIVERSITY OF SAN DIEGO	HC1
UNIVERSITY OF SOUTH CAROLINA	H80
UNIVERSITY OF SOUTH FLORIDA	HAE
UNIVERSITY OF SOUTHERN CALIFORNIA	H82
UNIVERSITY OF TEXAS	H86
UNIVERSITY OF UTAH	H91
UNIVERSITY OF VIRGINIA	H94
UNIVERSITY OF WASHINGTON	H95
UNIVERSITY OF WISCONSIN	H96
VANDERBILT UNIVERSITY	H92
VILLANOVA UNIVERSITY	H93
VIRGINIA MILITARY INSTITUTE	H87
VIRGINIA POLYTECHNIC INSTITUTE	H9A

APPENDIX G. MOS VARIABLE BREAKOUT

Variable	Description (MOS Fields)
Aviation	7509, 7518, 7523, 7525, 7532, 7543, 7556, 7557, 7562, 7563, 7564, 7565, 7566, 7588
Combat Arms	0102, 0180, 0202, 0203, 0204
Service Support	0207, 0402, 0602, 1302, 3002, 3404, 4302, 4402, 5507, 5803, 6602, 6002, 7202, 7305, 8059, 8061

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APPENDIX H. MARINE CORPS PERFORMANCE BUCKETS

(5) The Reporting Senior (RS) High. The highest fitness report average of any report written by the RS on a Marine of that grade. The RS high is equivalent to a relative value of 100.

c. The relative value will appear on the MRO's MBS in numeric fashion on an 80 to 100 scale.

(1) A relative value between 93.34 and 100.00 indicates the report is in the upper third of the RS profile.

(2) A relative value between 86.67 and 93.33 indicates the report is in the middle third of the RS profile.

(3) A relative value between 80.00 and 86.66 indicates the report is in the bottom third of the RS profile.

(4) It is possible to have a report with a relative value of less than 80.00; however, it will be depicted as having a relative value of 80.00 on the MBS.

Figure 10. Marine Corps Performance Buckets. Source: HQMC (2021b).

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APPENDIX I. NROTC UNIT DISTRIBUTION

UnitName	Frequency	Percentage (%)
ARIZONA STATE UNIVERSITY	6	0.19
AUBURN UNIVERSITY	53	1.71
BOSTON UNIVERSITY	44	1.42
CARNEGIE MELLON UNIVERSITY	40	1.29
COLLEGE OF THE HOLY CROSS	41	1.33
CORNELL UNIVERSITY	21	0.68
DUKE UNIVERSITY	15	0.48
EMBRY-RIDDLE AERONAUTICAL	21	0.68
FLORIDA A AND M UNIVERSITY	25	0.81
GEORGIA INSTITUTE OF TECHNOLOGY	26	0.84
HAMPTON UNIVERSITY	5	0.16
ILLINOIS INSTITUTE OF TECHNOLOGY	10	0.32
IOWA STATE UNIVERSITY	22	0.71
JACKSONVILLE UNIVERSITY	44	1.42
MAINE MARITIME ACADEMY	23	0.74
MARQUETTE UNIVERSITY	59	1.91
MASSACHUSETTS INST OF TECHNOLOGY	19	0.61
MIAMI UNIVERSITY	58	1.88
MOREHOUSE COLLEGE	10	0.32
NORFOLK STATE UNIVERSITY	2	0.06
NORTH CAROLINA STATE UNIVERSITY	44	1.42
NORTHWESTERN UNIVERSITY	24	0.78
NORWICH UNIVERSITY	133	4.3
OLD DOMINION UNIVERSITY	43	1.39
OREGON STATE	41	1.33
PENNSYLVANIA STATE UNIVERSITY	103	3.33
PRAIRIE VIEW A AND M UNIVERSITY	7	0.23

UnitName	Frequency	Percentage (%)
PRAIRIE VIEW A AND M UNIVERSITY	7	0.23
PURDUE UNIVERSITY	61	1.97
RENSSELAER POLYTECHNIC INSTITUTE	25	0.81
RICE UNIVERSITY	12	0.39
SAN DIEGO STATE UNIVERSITY	29	0.94
SAVANNAH STATE UNIVERSITY	17	0.55
SOUTHERN UNIVERSITY A AND M COLLEGE	12	0.39
SUNY MARITIME COLLEGE	37	1.2
TEXAS A AND M	112	3.62
THE CITADEL	201	6.5
THE GEORGE WASHINGTON UNIVERSITY	73	2.36
THE OHIO STATE UNIVERSITY	61	1.97
THE UNIVERSITY OF ARIZONA	37	1.2
TULANE UNIVERSITY	52	1.68
UNIVERSITY OF CALIFORNIA AT BERKELEY	28	0.91
UNIVERSITY OF CALIFORNIA AT LOS	20	0.65
UNIVERSITY OF COLORADO	65	2.1
UNIVERSITY OF FLORIDA	27	0.87
UNIVERSITY OF IDAHO	37	1.2
UNIVERSITY OF ILLINOIS	47	1.52
UNIVERSITY OF KANSAS	30	0.97
UNIVERSITY OF MEMPHIS	19	0.61
UNIVERSITY OF MICHIGAN	43	1.39
UNIVERSITY OF	34	1.1
UNIVERSITY OF	24	0.78
UNIVERSITY OF MISSOURI	40	1.29
UNIVERSITY OF NEBRASKA	40	1.29
UNIVERSITY OF NEW MEXICO	26	0.84
UNIVERSITY OF NORTH CAROLINA	25	0.81

UnitName	Frequency	Percentage (%)
UNIVERSITY OF NOTRE DAME	51	1.65
UNIVERSITY OF OKLAHOMA	32	1.03
UNIVERSITY OF PENNSYLVANIA	43	1.39
UNIVERSITY OF	49	1.58
UNIVERSITY OF SAN DIEGO	52	1.68
UNIVERSITY OF SOUTH CAROLINA	62	2
UNIVERSITY OF SOUTH FLORIDA	33	1.07
UNIVERSITY OF SOUTHERN CALIFORNIA	40	1.29
UNIVERSITY OF TEXAS	18	0.58
UNIVERSITY OF UTAH	15	0.48
UNIVERSITY OF VIRGINIA	31	1
UNIVERSITY OF WASHINGTON	40	1.29
UNIVERSITY OF	32	1.03
VANDERBILT UNIVERSITY	24	0.78
VILLANOVA UNIVERSITY	64	2.07
VIRGINIA MILITARY INSTITUTE	227	7.34
VIRGINIA POLYTECHNIC INSTITUTE	107	3.46
Total:	**3093**	

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APPENDIX J. NROTC COHORT YEARS

Variable	Obs	Mean	Std. Dev.	Min	Max
Commission Year					
2000	3092	.053	.223	0	1
2001	3092	.048	.215	0	1
2002	3092	.049	.217	0	1
2003	3092	.049	.216	0	1
2004	3092	.05	.218	0	1
2005	3092	.053	.223	0	1
2006	3092	.06	.237	0	1
2007	3092	.048	.213	0	1
2008	3092	.048	.213	0	1
2009	3092	.065	.247	0	1
2010	3092	.08	.271	0	1
2011	3092	.096	.294	0	1
2012	3092	.087	.282	0	1
2013	3092	.085	.278	0	1
2014	3092	.065	.247	0	1
2015	3092	.064	.245	0	1

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LIST OF REFERENCES

Allen, T. D., Eby, L. T., Poteet, M. L., Lentz, E., & Lima, L. (2004) Career Benefits associated with mentoring for proteges: A meta-analysis. *Journal of Applied Psychology*, *89*(1), 127–136

Andreister. (7 Feb 2012) Why not approach classification through regression? [Comment on the blog post "Why not approach classification through regression?"] https://stats.stackexchange.com/questions/22381/why-not-approach-classification-through-regression

Asch, B., Miller, T., & Malchiodi, A. (2012) A new look at gender and minority differences in officer career progression in the military (Report No. TR-1159-OSD). RAND.

Baker, B., Hocevar, S., & Johnson, W. (2003). The prevalence and nature of service academy mentoring: A study of navy midshipmen. *Military Psychology*, *15*(4), 273–283

Berger, G. D. (2020) Commandant's Planning Guidance: 38th Commandant of the Marine Corps.

Blake-Beard, S. (2011) Matching race and gender in mentoring relationships: Keeping our eyes on the prize. *Journal of Social Issues, 67*(3), 622–643

Clemens, A., Malone, L., Phillips, S., Lee, G., Hiatt, C., & Kimble, T. (2012). An evaluation of the fitness report system for marine officers (Report No. DRM-2012-U-001003-Final). CAN.

Das, B. L., Baruah, M. (Dec 2013) Employee retention: A review of literature, *IOSR Journal of Business and Management*, *14*(2), 8–16

Department of the Army (2017) A*rmy profession and leadership policy* (AR 600-100).

Dreher G. F.& Ash, R. A (1990) A comparative study of mentoring among men and women in managerial, professional, and technical positions. *Journal of Applied Psychology, 75*(5), 539–546.

Ergun, L. (March 2003) An analysis of officer accession programs and the career development of USMC officer, [Master's thesis, Naval Postgraduate School]. NPS Archive: Calhoun

Gille, L. (June 2002) Analysis of Company Officer Influence on Midshipmen Service Assignment, [Master's thesis, Naval Postgraduate School]. NPS Archive: Calhoun

Grace-Martin, K. (n.d.) *Why use odds ratios in logistic regression*, The Analysis Factor, https://www.theanalysisfactor.com/why-use-odds-ratios/

Headquarters Marine Corps (MPP-30). (2014, December 11). *Officer Retention and Prior Service Accessions* (Marine Corps Order 1001.65).

Headquarters Marine Corps . (2018, November 19). *Marine Corps Performance Evaluation (Short Title: PES) Manual* (Marine Corps Order 1610.7A).

Headquarters Marine Corps. (2020a). *Manpower Management Officer Assignments Roadshow.* Retrieved 4 Mar 2021 from https://www.manpower.usmc.mil/webcenter/ShowProperty?nodeId=%2FWebCenterSpaces-ucm%2FMRA-WC1.MANPOW126420%2F%2FidcPrimaryFile&revision=latestreleased

Headquarters Marine Corps (2020b, August 5). *FY21 NROTC Billet Vacancies (PNS/XO/MOI)* (MARADMIN 449/20, 2020). https://www.marines.mil/News/Messages/Messages-Display/Article/2301762/fy21-nrotc-billet-vacancies-pnsxomoi/

Headquarters Marine Corps (2020c, August 6). *MCRC Company Grade Selection Board for Fiscal Year 2021* (MARADMIN 454/20, 2020). https://www.marines.mil/News/Messages/Messages-Display/Article/2303500/mcrc-company-grade-selection-board-for-fiscal-year-2021-fy21/

Headquarters Marine Corps (2020d, September 30). *United States Naval Academy LEAD Program for Fiscal Year 2021* (MARADMIN 579/20, 2020). https://www.marines.mil/News/Messages/Messages-Display/Article/2366117/united-states-naval-academy-lead-program-for-fiscal-year-2021-fy21/

Headquarters Marine Corps (2021a). The Basic School. Retrieved 3 Mar, 2021 from https://www.trngcmd.marines.mil/Northeast/The-Basic-School/

Headquarters Marine Corps. (2021b). *Performance Evaluation System Part 1: The Basics.* Retrieved 10 Mar 2021 from https://www.manpower.usmc.mil/webcenter/portal/MMRP30

Hu, C., Wang, J., Sun, M., & Chen, H. (2008). Formal Mentoring in Military Academies. *Military Psychology*, *20*(3), 171–185.

Johnson, W. B., Lall, R., Holmes, E. K., Huwe, J. M., & Nordlund, M. D. (Jan 2001). Mentoring experiences among navy midshipmen. *Military Medicine*. 166, 27–31.

Johnson. (2010). Formal mentoring in the U.S. military: Research evidence, lingering questions, and recommendations. *Naval War College Review.*, *63*(2).

Kram, K. E. (1983). Phases of the mentor relationship. *Academy of Management Journal*, 26, 608–625

Kram, K. E. (1985). Mentoring alternatives: The role of peer relationships in career development. *The Academy of Management Journal., 28*(1).

Lehner, William (March 2008), An analysis of naval officer accession programs, [Master's thesis, Naval Postgraduate School]. NPS Archive: Calhoun

Levinson, D. J., Darrow, C. N., Klein E. B., & Levinson, M. H. (1978) Seasons of a man's life, Ballantine.

Lyle, D. & Smith, J. (April 2014) The Effect of High-Performing Mentors on Junior Officer Promotions in the U.S. Army, *Journal of Labor Economics*, *32*(2), 229–258

Marine Corps Recruiting Command. (2015, December 11). Volume II: Guidebook for Officer Selection Officers, 2016 Edition.

Marine Corps Recruiting Command. (2016, January 11). *Marine Corps Recruiting Command Officer Commissioning Manual (Short Title: MCRC OCM)* (Marine Corps Recruiting Order 1100.2A). https://www.mcrc.marines.mil/Portals/95/MCRCO%201100.2A%20(OCM).PDF

Molnar, C. (Feb 2021) Interpretable Machine Learning: A guide for making black box models explainable, https://christophm.github.io/interpretable-ml-book/

Naval Service Training Command. (2018, December 18). Regulations for Officer Development (NSTC M-1533 2D). Department of Navy.

Naval Education Training Command. (n.d). *Scholarship Application Process*. https://www.netc.navy.mil/Commands/Naval-Service-Training-Command/NROTC/Apply/

Noe, R. A. (1988). An investigation of the determinants of successful assigned mentoring relationships. *Personnel Psychology*, *41*(3), 457–479

Oakes, B. W. (2005). The propensity for mentorship at the United States Naval Academy a study of Navy and Marine Corps junior officers [Master's thesis, Naval Postgraduate School]. NPS Archive: Calhoun

O'Brien, W. E. (2002) The effect of Marine Corps enlisted commissioning programs on officer retention [Master's thesis, Naval Postgraduate School] NPS Archive: Calhoun

Osborne, T. M., Waeckerle, J. F., Perina D. (Aug 1999) Mentorship: Through the looking glass into our future, *Annals of Emergency Medicine*, *34*(2), 285–289

Parcell, A. D. (2001). An evaluation of URL officer accession programs. (Report No. CAB D0017610.A2). CNA.

Payne, S. C., & Huffman, A. H. (2005). A longitudinal examination of the influence of mentoring on organizational commitment and turnover. *Academy of Management Journal*, *48*(1), 158–168.

Ragins, B. & Kram, K. E. (2007). The handbook of mentoring at work theory, research, and practice. SAGE

Ragins, B., & Cotton, J. (1999) Mentor functions and outcomes: A comparison of men and women in formal and informal mentoring relationships, *Journal of Applied Psychology*, *84*(4), 529–550

Rockoff, J. (2008). Does mentoring reduce turnover and improve skills of new employees? evidence from teachers in New York City, *National Bureau of Economic Research*

Smith, C. (2018) *Idiot's Guide to Odds Ratios*, JournalFeed, https://journalfeed.org/article-a-day/2018/idiots-guide-to-odds-ratios

Smith, M. M. (1990) Officer commissioning programs, *Defence Economics*, *2*, 313–324

Statistics Solutions. (n.d.) There's nothing odd about odds ratio: Interpreting binary *logistic regression*, https://www.statisticssolutions.com/theres-nothing-odd-about-the-odds-ratio-interpreting-binary-logistic-regression/

Steinberg A. G., Foley, D. M. (1999) Mentoring in the Army: From Buzzword to Practice, *Military Psychology*, *11*(4), 365–379.

Stolzenberg, M. (2017) Exploring Marine Corps officer quality: An analysis of promotion to lieutenant colonel. [Master's thesis, Naval Postgraduate School]. NPS Archive: Calhoun

Princeton Review. (2021). *United States Naval Academy.* https://www.princetonreview.com/college/united-states-naval-academy-1022813

United States Naval Academy. (n.d). *USNA Marines.* https://www.usna.edu/USMC/index.php

University of South Florida. (n.d.) *Logistic Regression* Retrieved 25 Feb, 2021 from http://faculty.cas.usf.edu/mbrannick/regression/Logistic.html

Viator, R. E., & Scandura, T. A. 1991. A study of mentor protege relationships in large public accounting firms. *Accounting Horizons*, 5(3). 20–30.

Wilson, J. A. & Elman, N. S. (1990). Organizational benefits of mentoring. *The Executive, 4*(4), 88–94.

Wright, C. A & Wright S. D. (1987) The role of mentors in the career development of young professionals. *Family Relations, 36*(2), 204–208.

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