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The Impact of Tuition Assistance on Employee Retention: Cybersecurity Employee Perceptions of National Security Agency's College Tuition Assistance Program

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This is to certify that the doctoral dissertation by

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has been found to be complete and satisfactory in all respects,
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Walden University
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MPH, Walden University, 2020

MGA, University of Maryland University College, 1996

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Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

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Abstract

U.S. employers spend considerable sums on employee skill development, including investments in college tuition assistance programs (CTAP). Based on a review of recent literature, measuring employer return on investment can be difficult. The literature contained varying results on the effectiveness of employer-provided incentives on retention decisions and provided insufficient empirical or evaluative data on employee perceptions and the influence on retention. The purpose of this qualitative evaluative case study was to examine how cybersecurity employees at the National Security Agency (NSA) who participated in CTAP (2019–2023) perceived the program's effect on their career development and retention decisions. The theoretical framework used was job embeddedness and the skill-weights theory of firm-specific human capital. A qualitative, single-evaluative case study design was used to explore how employees perceived their participation in CTAP influenced their decision to remain with NSA. An inductive thematic analysis yielded four themes: (a) enhanced career opportunities, (b) facilitation of professional growth, (c) strengthening of employee commitment, and (d) effective recruitment and retention tool. The findings highlighted that CTAP was perceived to enhance employee job embeddedness and, in turn, strengthen commitment to the NSA. By investing in employees, NSA leaders seek to strengthen employee retention. The study illustrated the importance of examining employee perceptions of initiatives designed to enhance job embeddedness. By evaluating the impact of interventions, organizational leaders can potentially optimize their workforce strategies to reduce turnover and enhance organizational productivity and overall performance.

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Dedication

Completing this dissertation from start to finish took a village. As a full-time employee in an extremely demanding position, having my family and friends encouraging me to move forward and not give up has been amazing. Therefore, I would like to dedicate this research to my family, both at home and work: Dr. Mary Ellen Okurowski (MEO), Dr. Mark Asselin, and, mostly, to my husband Felix Guzman and my sister Dr. Mercedes Benitez-McCrary, who never give up on me and who will always be my greatest cheerleaders.

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Chapter 1: Introduction to the Study

Introduction

The aim of this study was to examine employees' perceptions of value of the National Security Agency's (NSA's) College Tuition Assistance Program (CTAP) on individual choice of employment with the NSA (Cohen, 2003). Officials at the U.S. Department of Defense (DoD) have delegated the National Cryptologic University (NCU), NSA's internal accredited university, to design and provide cybersecurity and signals intelligence training to the NSA and DoD workforce. The NSA board of directors has made several requests for validation of how the NSA's employee college tuition program influence employee retention. Information on the effect of retention programs is critical to leaders' efforts to advocate for continued funding from national-level stakeholders.

Background

An increasingly competitive employment market has affected the DoD as it competes with private employers for workers with science, technology, engineering, and mathematics (STEM) skills. The National Science Board (NSB, 2020) surveyed 139 public and private employers to better understand the global availability of STEM-skilled workers for the growing cybersecurity industry. The 2020 report projects a gap of over 3,400,000 STEM workers based on industry demand. The growing shortfall highlights the need for the DoD and the intelligence community to create policies and tools that attract and retain cybersecurity talent. The ability of intelligence community organizations to solicit federal funds for employer-provided programs relies on their

ability to justify and implement a consistent level of policy. An example is the NSA's CTAP (National Research Council, 2013).

In this study, I evaluated the impact of CTAP on cybersecurity employee retention at the NSA. The objective of the study was to gather and analyze evidence on how leaders implement policy and what the impacts, if any, are for continued support of employer-provided programs for college tuition assistance. I explored how cybersecurity employees perceive the value of CTAP in their decision to stay at the NSA. This study involved examination of the relationship between employees' participation in CTAP and their stated intent to remain with the NSA. I conducted a qualitative case study to explore employee motivational factors to better understand whether and how CTAP can influence employment retention. In the literature review, I identify additional areas for exploration based on how STEM skills directly affect cybersecurity work. Furthermore, I look at how this affects the workforce gaps reported in NSB (2020). The results of this study broaden the understanding of cybersecurity talent shortages; this includes how market competitiveness influences NSA leaders' use of employee retention incentive tools.

This study represents an important aspect of the knowledge base for research into the phenomenon of career choice, retention, and the extrinsic motivators of the STEM and cybersecurity workforce. To facilitate a deeper understanding of how tools, such as tuition assistance, can assist in mitigating the loss of NSA's cybersecurity workforce, I used current studies and analyses of the influence of workforce retention tools, such as employer-provided tuition assistance, to evaluate the effectiveness of the NSA's CTAP (see Alwan, 2019). Using the theory of human motivational factors (Homans, 1958),

which encompasses how intrinsic and extrinsic factors relate to job satisfaction (Herzberg, 1959), I explored the effect of tuition assistance incentives on retention, from the employees' perception of employability.

Akkermans and Tims (2019) found that in the absence of organizational career management practices, individuals might judge their employability to be at risk and start to waiver in their commitment to their current employer. Al-Qathmi and Zedan (2021) studied how incentive management systems (IMS) affect employee motivation and turnover. They uncovered relationships between job satisfaction, turnover, and the desire for career growth through continuing education and career opportunities. However, an additional study (Lu et al., 2016) conducted on the relationship between employability, emotional exhaustion, and turnover found no consistency in the employer's sense of employee value and turnover, necessitating additional study and clarification.

The study results can increase understanding of how cybersecurity analysts perceive the value of tuition assistance in their continued employment with the NSA. I explored the relationship between employees' participation in tuition assistance programs and intent to remain with NSA. I strove to understand how and whether CTAP influenced NSA workers' employment choice. I discovered additional areas for exploration on how STEM skills directly affect the pool of foundational cybersecurity skills and how this creates workforce gaps (see NSB, 2020). This study broadens understanding of cybersecurity, talent shortages, and how market competitiveness influences the NSA's use of CTAP as an employee retention tool.

This study represents an important aspect of the knowledge base related to the phenomenon of career choice and retention focused on the skilled cybersecurity workforce. This includes how organizational policy based on Manchester's (2012) skill-weights theory of firm-specific human capital and Herzberg's (1959) two-factor job satisfaction theory can lead to retention. Alwan (2019) highlights how retention IMS can influence worker perception of employability, and therefore should be considered an essential part of organizational career management practice.

Akkermans and Tims (2019) found that in the absence of organizational career management practices, individuals might feel that their employability is at risk and may start to waiver on their commitment to their employers. Al-Qathmi and Zedan (2021) studied the motivating factors of IMS and their effect on turnover. They uncovered the relationship between satisfaction, turnover, and the desire for career growth through continuing education and career opportunities. Yet, additional studies conducted on the relationship between employability, emotional exhaustion, and turnover intention found no consistency between employability, employer value of the employees, and turnover, each of which requires further study and clarification (Lu et al., 2016). Furthermore, studies have yielded varying results on employer-provided tuition assistance programs and the difficulty of measuring the return on investment (ROI) (Al-Qathmi & Zedan, 2021; Caldero & Craig, 2020).

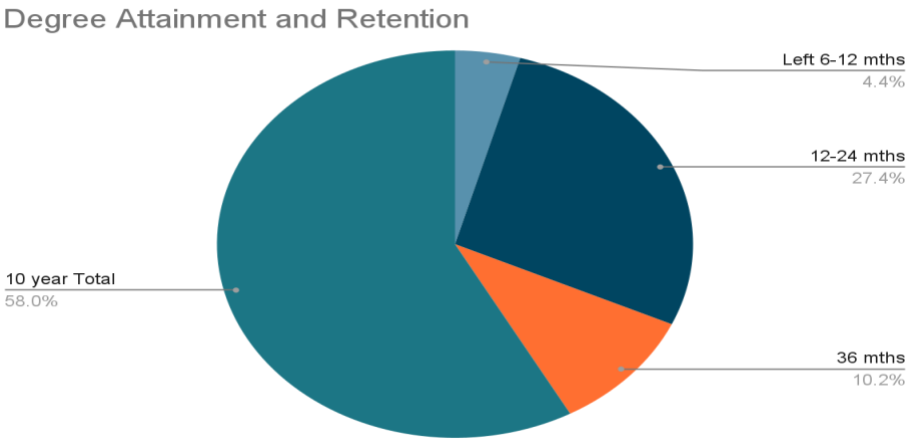
It is not practical to track reasons that some employees choose to move to competitors after participating in IMS programs at greater rates than others; as such, applying the skill-weights theory of firm-specific human capital to examine employment

incentives does not fully reveal employee motivation, nor does it help mitigate loss of cybersecurity employees at the NSA (Manchester, 2012). A leading reason why employees consider or choose to leave their employers is the increased opportunities in the cybersecurity employment market. Martini and Cavengo (2017) highlighted how labor market competitiveness for cybersecurity skills continues to increase and how workplace development and training programs have also expanded to include opportunities for more flexible and mobile careers and positions. I explored the relationship between perceived growth opportunities and employees' own sense of their employability.

Figure 1 shows the results of preliminary data analysis of CTAP participants' rate of resignations post degree attainment after having been at the NSA for over 10 years.

Figure 1

Rate of Resignations Among CTAP Participants After Degree Attainment



Note. CTAP = College Tuition Assistance Programs.

Table 1 shows the amount of CTAP funds, the number of participants, and the percentage of resignations between 2019 and 2022. Data were obtained from the NSA registrar. The percentages of resignations, which are shown for different levels of tuition support, can be viewed in comparison to the overall federal government workforce resignation rate of 18.8% (U.S. Department of Labor, 2022).

Table 1

CTAP Participants, Tuition Funding, and Resignation Rates, 2019–2021

Tuition received	No. participants	No. resigned	% resigned
$5,000–$10,000	505	41	8.1
$10,000–$50,000	980	53	5.4
$50,000–$100,000	76	5	6.5
> $1,000,000	7	0	0
Total participants	2,382	179	7.5

Note. CTAP = College Tuition Assistance Programs. Data were provided by the NSA registrar.

Problem Statement

The NSA leadership has questioned whether the CTAP influences commitment and retention of their cybersecurity workforce. The NSA needs to understand the role CTAP plays on employee job satisfaction and commitment to NSA to better understand the impact on employee retention. Increased understanding of the role of CTAP is vital to NSA stakeholders' and leadership's continued advocacy for CTAP funding. Recent research literature shows varying results on the effectiveness of employer-provided incentives, such as tuition assistance on employee retention decisions (Al-Qathmi and Zedan, 2021; Manchester, 2012). These studies provide insufficient empirical or evaluative data on employee perceptions of such programs and the programs' influence,

if any, on retention of the federal cybersecurity workforce; likewise, few studies note patterns on intent to resign, or retention changes after the use of CTAP (National Research Council, 2013; NSB, 2020).

Mitchell et al. (2001) addressed the multifaceted dimensions of employee commitment, or the concept of job embeddedness; which includes (1) links to people, teams, and groups, (2) perceptions of their fit with the job, organization, and community, and (3) what they say they would sacrifice if they left their jobs. Their research shows how financial gain in isolation may not translate to commitment. Therefore, additional empirical and evaluative data are needed to better address the implications of human capital strategic policies for incentive programs. The NSA leadership has seen a number of resignations of its workforce after employees completed degree programs using CTAP. Leadership questioned the effectiveness of the CTAP for retention. Senior NSA leaders have directed the NCU to evaluate and provide empirical data to validate the observation that there is a higher rate of attrition from those who have attended more prestigious and expensive schools such as Harvard, Wharton, and Johns Hopkins after having received CTAP funding.

Studies have shown that U.S. employers spent approximately $177,000,000,000 on formal training and talent development annually, of which approximately 10% is spent on tuition assistance programs, such as the NSA's CTAP. Most employers, however, do not have systematic assessment of the value that these programs return to the employer (Lumina Foundation, 2022). The NSA, like many private industry employers, cannot always quantify the actual ROI of career management programs as the programs relate to

their human capital management (HCM) strategies. As such, the agency was interested in understanding how employees perceive the tuition reimbursement program.

Purpose of the Study

The aim of this qualitative evaluative case study was to examine how cybersecurity employees at the NSA who participated in CTAP (2019–2023) perceive the program's effect on their career development and retention.

Research Question

How do cybersecurity employees participating in the CTAP program at the NSA perceive the program's impact on their career development and on their continued stay with the agency?

Theoretical Framework

The key theory used to ground this study was job embeddedness. I drew on the principles outlined in Mitchell et al. (2001) theory of job embeddedness and further developed by Holtom and Darabi (2018). The present study also drew on the skill-weights theory of firm-specific human capital as established by Manchester (2012). I tried to answer the question of why employees stay with their jobs at the NSA after using CTAP. Manchester argued that employees tend to stay at their jobs because they have generated a sense of personal commitment and because they have been able to increase their human capital; this comes in terms of their knowledge, skills, and abilities developed through education, training, and experience. As such, employees are more reluctant to leave their jobs because they believe that their employability is directly related to the job they hold.

In conceptualizing job embeddedness, Mitchell et al. (2001) argued that employees stay with their jobs because they have strong social ties to their coworkers, Furthermore, employees are embedded in their organizations because they have access to resources, they have opportunities for advancement, and they feel that they are treated fairly. Both Manchester (2012) and Mitchell et al. (2001) theorized why employees stay with their jobs. However, the theories focus on different factors. Manchester's theory focuses on the investment that employees have made in their human capital, whereas job embeddedness focuses on the social, psychological, and organizational factors that make employees want to stay in their jobs (Mitchell et al., 2001).

To increase understanding of the forces and contextual meaning of employee retention, I used social exchange theory (SET) from Homan (1958) to understand the employee and employer relationship. Using the concept of job embeddedness, Mitchell et al. (2001) focused on an employee's perceptions of organizational support and of supervisor support and how these affect the employee's overall well-being; Holtom and Darabi (2018) further asserted that effects on career aspirations and can be a predictor of retention. Coupling the concept of job embeddedness with Manchester's theory and Homan's SET, I explored how employee and employer shared outcomes, values, and sense of well-being affect retention.

I also used SET, which helps explain human capital strategies and policies from the perspective of social exchange, a phenomenon that excludes the possibility of objective truth, but instead claims that everything is relative to an employee or employer's perspective (Homans, 1958). Examining the relationships between employees

and employers may lead to an increased understanding of how employees judge employer support and whether programs such as CTAP influence employees' decision to stay in the organization.

Herzberg (2016) built on the hierarchical motivational theory from Maslow (1943) and discussed extrinsic and intrinsic motivation factors related to job satisfaction. Such theories help in understanding what motivates employees and how greater freedom of employment influences retention. This is important because of employer investment in both long-term and contracted employees. In addition, the current study may lead to a better understanding of how the growing phenomenon of knowledge workers influence may change organizational retention. These workers comprise at least one quarter of the entire U.S. workforce (Davenport, 2013, as cited in Chernyak-Hai, 2018, p. 526). As Flair (2019,) stated,

> Human capital is the sum of every attribute that adds economic value to what an individual can produce. This includes a person's creativity, useful knowledge in specific areas, work skills in a particular field, social skills, personality, and work ethic. All of these can be used to determine the quality and quantity of what a person can produce in terms of economic work, and by extension what he or she will contribute to the overall economy in which the individual participates. (p. 1)

Flair (2019) expanded Manchester's the skill-weights theory of firm-specific human capital by considering market demand, competitiveness, and the concept of poaching (i.e., enticing employees from their employers after having increased their value through education). Manchester (2012) also addressed the limitations of the skill-weights

theory of firm-specific human capital as it applies to current employment and retention incentives and challenges. Manchester cited Becker's (1962) study that employers may not invest in the general development of their workforce because they believe that providing generalized or core skills would increase attrition through greater transferability of skills; the fear is that this lowers the employer's ROI in training the workforce. The ability and willingness of upper and middle management to implement human capital management strategies consistently across the organization is therefore a factor that may limit the success of programs for employee retention.

Becker (1962) focused on human capital investment in training, like CTAP, and its impact on earnings. His analysis of studies on the impact of employer training reflected how it may create greater transferability of skills, increased employability of participants in training programs and the impact on retention. Becker stated it had become more evident from studies of employee income growth that factors beyond physical resources such as the intangible resource of knowledge, may play a larger role than once believed. A concern with investment in human capital, therefore, ties in closely with the new emphasis on intangible resources and may help to understand the inequality in income among people based on knowledge and ability created through training. Becker, 1962 also argued that training is an investment in human capital focusing on how individuals "invest" in themselves to acquire skills and knowledge that enhance their productivity and economic well-being. Therefore, tuition assistance can be seen as an investment in the increase of worker productivity that led to higher wages and job satisfaction. Therefore, CTAP leadership focus on investing in job-related and specific

skills that support NSA's cybersecurity mission. I explored participants' perceptions of CTAP with regard to their retention decisions. Homans, (1958) SET allows a comparison of the relationship between employee and employer and predicts one or more of the three outcomes of the skill-weights theory of firm-specific human capital in practice: employee commitment, employee motivation, and desire to stay with the organization.

Nature of the Study

To address the research question in this qualitative study, I conducted an evaluative case study. This design allows for the exploration and understanding of a phenomenon (Yin, 2018). I used a single-case study to explore how career management tools, such as tuition assistance used for recruitment and retention, are perceived by a small group of cybersecurity employees in their career decisions (Hansen and Vass, 2021). I explored how employees who participated in CTAP between 2019 and 2023 perceived the value of tuition assistance and how their participation affected their decision to stay employed at the NSA. It also provides NSA leaders and government stakeholders with evidence based on the value of employer-provided education and training programs.

Using a qualitative evaluative case study allowed me to conduct participant interviews, observe their reactions in their natural work setting (Creswell, 2017). Deci and Ryan (2017) showed how employer-provided tuition assistance can influence employees to pursue further education and training by providing financial assistance thereby helping employees develop the skills and knowledge they need to advance their careers, leading to increased job satisfaction, productivity, and loyalty. Studying the

phenomenon of choice and employee perception of tuition assistance on their decision to stay or resign from NSA can lead to better understanding of the impact of job embeddedness.

The advantage of using a qualitative case study is that it allows for the introduction and use of secondary data and documents to establish trustworthiness through triangulation and identifying additional factors that influence career choices, such as length of employment, educational level, and use of CTAP. The ability to show how CTAP influences employee retention assists the NSA in shaping continued support of their human capital strategies, policies, and funding for IMS programs, in turn strengthening the retention of cybersecurity employees.

When researching to inform policy, the researcher requires consideration of the results, and the need to develop effective means to communicate the findings to the NSA policymakers. Keeping in mind that policy research often involves the evaluation of programs or interventions to make recommendations for evidence-based policy changes. This study builds on existing research by exploring turnover behavior and increasing understanding of the perception of job-related training on retention. It expands the data needed to begin a more detailed analysis using an evidence-based policy, a process of using the best available evidence to inform decision-making. Evidence-based policy assists NSA leadership in making decisions on future policies and investment in CTAP based on research and evidence, rather than on opinion or ideology. As Haggerty (2012) reminds noted, evidence-based policy considers all the evidence when making decisions and that policymakers should consider all the evidence available, not just the evidence

that supports their preferred outcome. I addressed the perceived value and influence of tuition assistance on the program users and their decisions to stay employed at the NSA.

Definitions

Cybersecurity: **"**Measures taken to protect a computer or computer system (as on the Internet) against unauthorized access or attack" (Merriam-Webster, n.d.). Cybersecurity is the practice of protecting systems, networks, and programs from digital attacks. These cyberattacks are usually aimed at assessing, changing, or destroying sensitive information, extorting money from users via ransomware, or interrupting normal business processes (CISCO, 2022).

Cybersecurity Intelligence Analyst: Skilled professional in the areas of science, technology, engineering, and math (STEM), who specializes in analyzing systems to protect, defend, and predict vulnerabilities in information systems" (National Science Board [NSB], 2020).

College Tuition Assistance Programs (CTAP): Employer-based benefits or incentives where employees are provided funding to cover the cost of continued education. CTAP is used as a human capital management tool to recruit, develop, sustain, and retain employees (Caldero & Craig, 2020).

Employability: An individual's understanding of their value to employers, based on the skills and knowledge they have acquired. It includes the ability to be employed and remain competitive in the workforce (Akkerman et al., 2019).

Job embeddedness refers to the extent to which an employee is connected to their job and organization through a combination of links, fit, and sacrifice. This theory

suggests that individuals remain in a job not only because of satisfaction or commitment, but also because of various organizational and personal factors that make leaving difficult or undesirable (Mitchell et al., 2001).

Assumptions

According to Ravich and Carl (2016, 2021), an assumption is a statement of what is believed to be real but has not been validated or verified. The philosophical assumption in the skill-weights theory of firm-specific human capital is based on the principle that human capital strategies are applied equally; it also assumes that such strategies directly affect job satisfaction and drives increased retention of CTAP participants. In the Sonnenberg and Zijderveldb (2013) study, the authors highlight incongruence with how there is a discrepancy between organizational leadership and an individual where one believes the individual has "talent" and the other does not, and vice versa. SET from Homans (1958) assumes that organizational leaders are applying human capital strategic policies for retention; this assumption includes engaging employees in discussion on expectations at an organizational and employee level; such discussions build employer-employee relations, resulting in an exchange that benefits both parties and increases retention.

An assumption based on theories of motivation and employability is that CTAP participants make decisions based on their basic needs (physiological, security, survival, self-esteem), which are related to salary in most employment instances, and employee self-actualization (Akkerman & Tim, 2019; Herzberg, 1959; Maslow, 1954). Assuming multiple factors influence retention, this study focuses on participant perception of

CTAP, including job satisfaction and retention using two-factor motivational theory on job satisfaction as a basis for career choice and sense of employability (Cohen, 2003).

The ontological assumption here is that the resulting reality differs based on each participant's perception of reality. Truth is constructed from the common experiences of multiple individuals. This is called the 'phenomenological reduction' or 'subjective achievement of truth" (Husserl, 1913/1954). By assuming each participant provides open and honest responses about their perceptions of CTAP, I assume that I collected differing views of the value of CTAP. Second, I assume that all participants willingly provide detailed answers to questions and expand upon their answers, providing their perspective based on full knowledge of the program goals and desired outcome (an epistemological assumption). I also assumed participant data would show naturally occurring themes and that all participants are aware of CTAP policies; further, I assume that they understand that CTAP is focused on building participant career growth and on incentivizing retention.

Becker (1962) argued earnings are affected by on-the-job training and employers offering training programs such as CTAP generally have the following assumptions about the impact on the participating employees:

- Tuition assistance programs help employees improve their skills and knowledge, which can make them more valuable to their employers.
- Employees who improve their skills and knowledge are more likely to be satisfied with their jobs, leading to increased retention.

- Tuition assistance programs help employers attract and retain top talent by increasing employees' job embeddedness.
- Tuition assistance programs help employers build a more skilled and knowledgeable workforce.
- Tuition assistance programs help employers save money on recruiting and training costs.

I gathered evidence to examine these assumptions. The study results assert and support the assumptions as reported by current literature; it also identifies limitations found in this literature that assume that tuition assistance tends to enhance retention and support employee job satisfaction.

The result of literature review shows that employer-based incentive programs, including tuition assistance, do impact retention. However, there was limited reference to the impact of how these policies are applied across organizations. The assumptions focus on an employee's intent to resign based on market competitiveness and lack of career development. The research focused on additional factors not well addressed in the current literature. The NSB (2020) study indicates a lack of talent growth and availability as a factor in future cybersecurity skilled professionals; without a growing stream of talent, the competition for cybersecurity professionals will continue.

Under optimal conditions, employer tuition assistance programs increase retention along with career satisfaction and self-actualization. This case study focused on a specialized group of participants who hold top-secret clearances and work for the NSA as cybersecurity analysts. The study shows the uniqueness of the NSA and the assumption

that tuition assistance alone increases retention. Three key factors that influence the viability of such retention programs at the NSA are as follows:

- market competitiveness for the cybersecurity-skilled employee with a top-secret clearance,
- the current shortage of cybersecurity-skilled talent that can be cleared at a top-secret level, and
- the generational gap of loyalty to the nation and U.S. public policy on cyber defense.

Finally, the framework of this study relies on ontological philosophy (i.e., what employees perceive as reality). The theory of motivation, employability, and employee-employer relationships (Homans, 1958) may have less impact on the results of the study (Davenport, 2013, as cited in Chernyak-Hai, 2018, p. 526).

Scope and Delimitations

Participants in any profession may be reluctant to share thoughts about their career decisions, limiting the validity of the data collected. In the NSA, this is heightened due to security clearance restrictions and the availability of participants from the local versus global NSA workforce. To mitigate participant reluctance, I used a survey to screen for issues that could lead to the listed delimitations.

Limitations

Svensson and Doumas (2013) discuss limitations that can be viewed as weaknesses in the study and state that, "research methods should be carefully grounded in an understanding of the nature of the investigated phenomena" (p. 49). As with any study,

the present study is limited by data collection, the timeframe of the study, population pool, and interpretability of data. Limitations particular to this study are as follows:

- understanding the consistency of application of human capital strategies, such as tuition assistance across the organization and the effect on the participants; and
- with regard to job embeddedness, the inability to fully understand levels of social exchange, and the employer-employee relationship based on participant perspective; and
- the potential reluctance of participants who are current NSA employees to discuss intentions to resign or join in open discussions.

These limitations possibly constrain understanding of CTAP's effect on retention; likewise, the application of human capital strategies and policies may also affect retention.

To limit and manage the limitations, an online survey was used to pre-select a pool of employees willing to participate fully and who fit the established criteria. This strategy provided access to a larger and more geographically diverse pool of participants. An additional limitation to the study broadly is the subjective nature of qualitative data and its origin in context; these make it difficult to apply conventional standards of reliability and validity. In this study, I reviewed several factors that influence the perceived effect of tuition assistance on retention decisions. Therefore, I isolated changes that could be due to population demographics.

Significance

The literature review provided evidence that most studies conducted on employer provided tuition assistance are quantitative and focus on understanding ROI, versus understanding the employee perception of value or what motivational factors influence their decision to commit to employers. This is the first exploratory study on the effect of tuition assistance policies and programs from the point of view of the participants; it is also the first to look at the effect on organizational commitment of the NSA's cybersecurity workforce. I explored how participation in the NSA's CTAP affects retention; it highlights the relationship between organizational and employee perceived value, or truth, by providing empirical data on the retention of cybersecurity employees (Narayanan et al., 2018). The results are a basis for further aligning tuition assistance to the agency's learning and development human capital strategies; allowing increased advocacy for mission funding in support of building and sustaining an expert diverse workforce (BSEDW). This study supports the work of other U.S. government agencies with regard to the strategic investment in their cybersecurity workforce.

Summary

This study was to examine employees' perceptions of value of the National Security Agency's (NSA's) College Tuition Assistance Program (CTAP) on individual choice of employment with the NSA. Driven by the need to understand the impact on NSA retention of employees with STEM skills and an increasingly competitive employment market NSA leadership sought to understand the perceived value of CTAP to job retention for the NSA's cybersecurity workforce.

Chapter 2: Literature Review

Introduction

The study used a qualitative case study to examine the relationship between employees' participation in CTAP and their career choice and job retention. The theoretical concepts used to frame the study were Haltom's job embeddedness, Homan's social exchange, Maslow's theory on motivation along with the philosophical assumption that if human capital policy is applied equally job satisfaction and retention will increase. The concepts listed above improved understanding of how the relationship between employee and employer impacted job satisfaction and retention of cybersecurity employees. The results form the basis for NSA's leadership understanding of the impact and value of CTAP as a program for employee retention.

Based on the theories of motivation and employability it was assumed CTAP participants made decisions based on their basic needs (physiological, security, survival, self-esteem) and employee self-actualization (Akkerman & Tim, 2019; Herzberg, 1959; Maslow, 1954). Assuming multiple factors influence retention, I study focused on participant perception of CTAP on job satisfaction as a basis for career choice and sense of employability (Cohen, 2003), and that organizational leaders applied human capital strategic policies for retention by engaging employees in setting expectations .

The ontological assumption here was that the resulting employee reality differs based on each participant's perception of reality.

By answering the research question: How do cybersecurity employees participating in CTAP at the NSA perceive the program's impact on their career

development and their continued stay with the agency? NSA leaders can establish basis for maintaining continued funding for CTAP.

Due to the subjective nature of qualitative data and its origin in context it was difficult to apply conventional standards of reliability and validity. In this study, I reviewed several factors that influence the perceived effect of tuition assistance on retention decisions. Therefore, I isolated changes that could be due to population demographics.

Employers are motivated to recruit and retain skilled science and technology professionals; however, the recruitment and retention of these professionals is particularly challenging. Similarly, the United States continues to face a growing shortage of graduates specializing in STEM and struggles to attract and retain skilled cybersecurity professionals with STEM skills (NSB, 2020). This trend has created a highly competitive recruitment market for cybersecurity professionals needed by the NSA to execute its national security mission. The NSA is reviewing its policies and investment in recruitment and retention as part of its human capital management programs, such as tuition assistance. This review helps ascertain the value to employee retention within the NSA cybersecurity workforce.

A review of recent studies on employee retention reflects the varied effectiveness of human capital incentive programs, including programs like CTAP. Studies also show how the application of employee incentives varies from organization to organization (Al-Qathmi & Zedan, 2021; Manchester, 2012) and may produce differing levels of effectiveness on retaining employees with the skills needed by organizations. Reviewing

studies on IMS and retention does not provide sufficient empirical or evaluative data on employee perception of employer-based tuition reimbursement or assistance programs on organizational commitment or long-term retention.

The literature reviewed highlights the need for further studies to assess the effectiveness of retention incentives and to understand the value of talent management strategies such as employer tuition assistance programs, on career development and retention (Martini & Cavenago, 2017). More recent studies highlight the varying impact of employer-based tuition assistance programs for recruitment and retention and the gap in understanding employee perception of the value of such programs on employee retention. By increasing understanding of the value of the NSA's CTAP, the NSA will be better positioned to gain consistent funding and application of policies for the use of CTAP as a tool for retention of the cybersecurity workforce.

I conducted a qualitative evaluative case study to explore the effect of employer-provided tuition assistance on the retention of cybersecurity employees who currently work for the NSA and participated in CTAP between 2019 and 2023. The results of the study can be used as a basis for further aligning tuition assistance to the agency's learning and development portfolio and advocating for consistent mission funding. These policies build and sustain a diverse expert workforce. The study can also be the basis for the work of other intelligence community agencies in developing and retaining their cybersecurity workforce.

Literature Search Strategy

The strategy for the literature review involved first highlighting themes and words in the study purpose statement and reviewing topic-related areas. I then used Walden University Library resources to further refine keywords and to conduct searches of academic databases. The databases used included Political Science Complete, EBSCOhost, EBSCO Discovery, ERIC, SAGE, and ProQuest Central. I also used Walden's Thoreau multidata base search tool and the search engine Google Scholar. The websites of the National Science Foundation and of U.S. government agencies Office of Personnel Management (OPM), Office of Management and Budget (OMB), and Office of the Director of National Intelligence were also searched. The keywords searched included the following: *cybersecurity*, *STEM, education policy*, *human capital management*, *career choice*, *workforce development*, *employability*, *employer-based college programs*, *incentive management*, *workforce education support*, *retention and recruitment incentives*, *technology workforce incentives*, *employee competitiveness and market competition*, *job satisfaction*, *job embeddedness*, *motivation*, *cybersecurity education*, *cybersecurity*, and *NSA*.

Theoretical Foundation

The key theories that ground this study are the skill-weights theory of firm-specific human capital (Manchester, 2012) and job embeddedness (Mitchell et al. (2001). In addition, two-factor motivation and job satisfaction theory (Herzberg, 1959), and SET (Homans, 1958) help to understand the employee and employer relationship. Skill-weights theory of firm-specific human capital and SET help increase the understanding of

employee-employer relationships that provide shared outcomes and value. SET helps shape human capital strategy and policies from the perspective of social exchange; this phenomenon excludes the possibility of truth and the idea that everything is relative from an employee or employer's personal perspective.

Additional theories and concepts such as two-factor motivational theory (Herzberg, 1959) and Holtom and Inderrieden, (2006) on employee turnover, and retention helped expand the understanding of employee motivation. Mitchell et al. (2001) discusses how job embeddedness theory assists in the understanding of how employee characteristics are influenced by the changing work environment, sense of community, linkage to the job, greater freedom in employment, and self-worth as perceived by the employee through their work. Using the concept of job embeddedness, Mitchell et al. (2001) focused on an employee's perception of organizational support, and perception of supervisor support for the employee's overall well-being, and career aspirations. These may be predictors of retention. Table 2 summarizes the dimensions of job embeddedness.

Table 2

Dimensions of Job Embeddedness

Dimension	On-the-job	Off-the-job
Links	Close relationships with coworkers and supervisor	volvement in community and strong social ties
Fit	Work is meaningful, challenging, and rewarding	Values and beliefs are aligned with organization's culture and goals
Sacrifice	Financial and benefits	Social ties and community involvement

Note. Adapted from "Increasing Human and Social Capital by Applying Job Embeddedness Theory," by B.C. Holtom, T. R. Mitchell, T. W. Lee, C. J. , 2006, *Organizational Dynamisc*,*35*,p. 320 (DOI:10.1016/jorgdyn.2006.08.007).

The use of motivational theories helps outline the concept of human motivation and organizational human capital strategic policy on career choice and retention. Various motivational theories, such as existence, relatedness, and growth (ERG) theory (Alderfer, 1969), provide the basis for understanding human motivation based on extrinsic factors. Building on the philosophical theories that look at how employees perceive programs such as tuition assistance expands knowledge on the influence on retention decisions.

Herzberg (1959) described the top factors in worker job satisfaction as achievement and growth. Building on the theory of hieratical human needs (Maslow, 1954), Herzberg describes how basic motivational factors of physiological needs impact the highest level of self-actualization through achievement and growth. Herzberg's (1959) motivation theory aligns with both Maslow's and Alderfer's theories of human motivation, work performance, or job satisfaction. Later, Alderfer (1969) theorized three main motivations for human existence: (a) physiological and safety, (b) relational and sense of belonging, and (c) growth through personal achievement and feelings of value. The three motivational theories I have referenced support the concepts of SET on how humans typically make choices based on what they give and receive in relationships.

The skill-weights theory of firm-specific human capital (Manchester, 2012) expands on the need for employees and employers to develop a relationship of trust and shared values; Manchester's theory also outlines the need for transparency to enable

continued employee growth and organizational mission success. ERG theory (Alderfer, 1969) supports the philosophy of employability (Akkermans & Tim 2019), and addresses employee need to feel valued at work and continue to develop and achieve personal and professional goals. Meeting physiological and psychological needs is evident when looking at an employee's perception of employability, sense of belonging, personal and professional outcomes. These are reflected in job satisfaction and retention.

Mitchell et al. (2001) theory on job embeddedness helped expand on how employees are more likely to stay with a job if the following hold: the costs of leaving are high; there are few attractive alternative opportunities; the job is a good fit for their skills and abilities; they have strong social ties to their co-workers and supervisors; they are satisfied with the location of the job; they are committed to the organization; and they perceive that they have few better alternatives. Job embeddedness also provides a better understanding of how employers can apply incentives like CTAP to increase job satisfaction and retention (Holton et al., 1997).

Maslow's hierarchy, SET, ERG, and two-factor motivational theories all provide a greater understanding of the growing phenomenon of knowledge workers; these workers now comprise about one-quarter of the entire U.S. workforce and are less committed to one employer for life (Davenport, 2013 as cited in Chernyak-Hai, 2018, p. 526). Each of these theories assisted in framing the qualitative case study to better understand the reality of the effect of employer tuition assistance programs on the perception of value and therefore retention. The case study also furthers understanding of how employers might prefer not to invest in programs such as tuition assistance to

develop transferable skills because these programs have been shown to also lead to increased rates of resignations. The study uncovers areas that can enhance retention in addition to providing tuition assistance.

Using the skill-weights theory of firm-specific human capital to explore and evaluate investment in employees provided a greater understanding of managing the employer-employee relationship. This is due to human resources (HR) policies that invest in the development of employees, build commitment to the organization, and increase employee engagement (Lepak & Snell, 1999, as cited in Collins, 2021). When these high-investment policies are consistently implemented across organizations, the workforce investment strategies result in greater employee commitment and motivation (Kehoe & Collins, 2017).

Human capital strategy in the current competitive skills market focuses on creating internal pools of STEM talent to meet organizational outcomes (Manchester, 2012). Retaining talent has become more difficult as skills become more transferrable and the demand for STEM skills needed for cybersecurity increases in demand. Retention as defined by the Merriam-Webster dictionary is the act of retaining; to retain is to keep in possession or use (Merriam-Webster, 2023). The review showed a gap in the literature on the effectiveness of career management programs beyond ROI. Therefore, with reference to Table 2, there was a need to study the value of CTAP from the employee's perspective and how this impacts their decisions to stay with their employer. Recent research provides support for the notion that a human capital strategy leads to competitive advantage by creating potentially rare and valuable human capital (Kehoe &

Collins, 2017; Takeuchi et al., 2007). Other researchers have focused on social capital (e.g., Collins & Smith, 2006; Kehoe & Collins, 2017; Shaw et al., 2005).

Human capital management on resource-based value (Collins, 2021) provides a framework to evaluate the employer and employee contract and the perception of value. Manchester (2012) highlights the concept of ROI on tuition assistance in the context of employee retention. A key area discussed by Manchester is demand, competitiveness, and the concept of enticing employees away from their current employers after they complete their degrees, a practice where increased incentives are used to attract employees away from the current employer. Manchester also discusses the limitations of the skill-weights theory of firm-specific human capital as it applies to more recent use of employment and retention incentives and challenges. SET is used to compare the relationship between employee and employer and predict one or more of the three outcomes of HR management practice: employee commitment, employee motivation, and desire to remain with the organization. Each of these referenced theories and philosophies forms a foundation for exploring the phenomenon of how employees make choices. The theories address how employees perceive human capital strategies and programs provided by their employer and how these affect their career decisions with regard to commitment to an organization.

Literature Review Related to Key Concepts

The literature on employee retention and work commitment focuses on how career decisions are influenced by employer commitment to employees through human capital strategy and policies. These policies include salary, position, self-actualization, as

well as employer-based training and development. Studies by authors such as Al-Qathmi and Zedan (2021) focus on the motivating factors of IMS and the effect on turnover in the cybersecurity field. This study helps uncover the relationship between satisfaction, turnover, and the desire for career growth through continuing education and opportunities. As seen in Table 2, Mitchell et al. (2013) explores the role of job embeddedness as an additional indicator of individual commitment to their job. This includes being "stuck" or attached when social or community connections are a significant part of the person's identity. In the case of the NSA cybersecurity workforce, this study confirmed that many stay because of their commitment to U.S. national security mission and loyalty. Alwan (2019) discusses the state of the U.S. national cybersecurity workforce and highlights the difficulties of building and sustaining cybersecurity talent. Alwan's research represents a significant addition to our understanding of the phenomenon of career choice and retention in skilled cybersecurity employees.

To better understand what influences employees' career decisions, I reviewed the literature on human motivational factors. Cohen (2003) applies existential theory to explain career decision-making in the context of individual stability and opportunities over the lifespan of the employee, providing additional means for framing this research and further studying the relationship between opportunity, and career choice. Akkermans et al. (2019) examined the phenomenon of employability as a mediator in the employee-employer commitment relationship. Akkermans also investigates the relationship between perceived investments in HR practices, and workplace commitment using the

principles of SET (Homan, 1958). Akkermans introduced perceived employability as a potential mediator to incorporate career perspective, the paper argues that perceived investments in human capital management practice enhance feelings of employability, which then create increased workplace commitment.

The Lumina Foundation (2016, 2021) conducted two studies of Cigna employees. The 2016 study highlights how perceptions of employability or employee sense of value to their employer can be used to determine career management practices and develop employee expectations as it relates to retention outcomes. The 2021 study sample (N = 437), which provided support for the hypotheses that perceived investment in human capital enhances employees' sense of employability. Performance feedback and reward practices are argued to be unrelated to commitment via employability. The study findings reflect that employee perception of employability is a greater factor in the exchange with their employer than programs like CTAP. Building on Williams-Gould and Davies (2005), the 2021 Lumina study argues that employability may be the basis for understanding human capital management (HCM) practice effectiveness and the employee-employer relationship.

Organizational commitment and job embeddedness concepts from Mitchell et al. (2001) proposed a model of employee turnover that focuses on the connections that employees have with their jobs, organizations, and communities. They argued that employees are more likely to stay with their jobs when they have strong connections in three areas, location, social, and investment. Young (2012) examines job embeddedness theory and finds that varying levels of job embeddedness impacts employee retention or

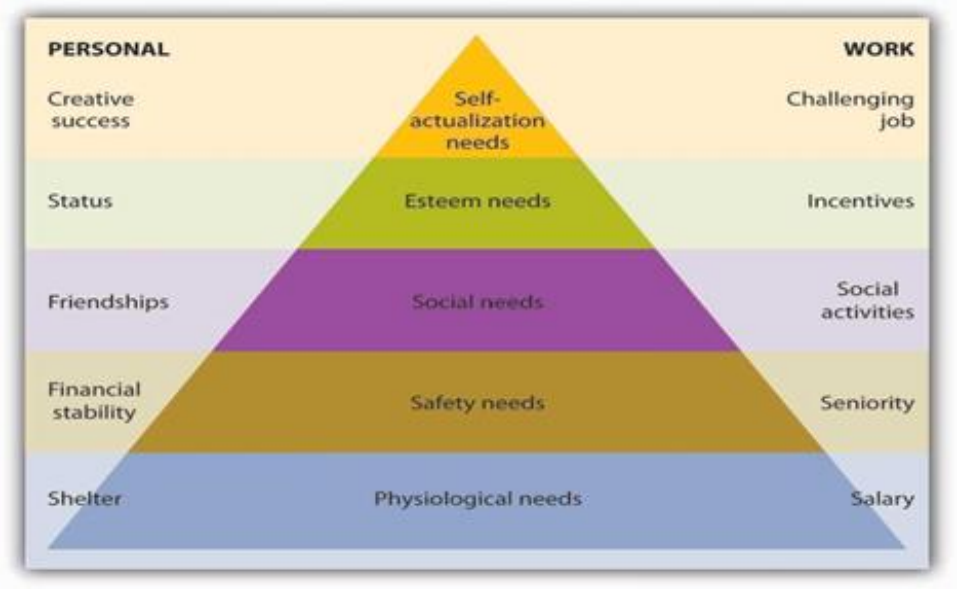
intent to stay with the U.S. Department of Agriculture extensions in two different states. Michell et al. (2001) describes job embeddedness theory as links that employees have to other people, teams, or groups; this also holds with regard to employees' perceptions of job fit, organization, community, and beliefs of what they would sacrifice if they left their job. Mitchell et al. (2013) gives insight into what factors impact retention decisions beyond human capital incentive programs like CTAP and generally how strong their commitment is to their employer.

Lee et al. (2013) expanded on (Mitchell et al., 2001) job embeddedness theory by examining the factors that contribute to employee retention. Their quantitative study focused on measuring job satisfaction and turnover rates. In contrast, this qualitative study delves into the subjective experiences of employees, exploring their perceptions of job embeddedness and their intentions to stay with the organization. By adopting a qualitative approach, this study provides a deeper understanding of the psychological and social factors influencing employee retention decisions.

Maslow's theory of hierarchical human needs provides an additional lens to explore employee decision-making factors as they relate to employee satisfaction. Figure 2 shows Maslow's (1954) hierarchy of needs defined on a personal and work basis.

Figure 2

Maslow's Hierarchy of Needs Theory



The top tier of Maslow's theory addresses the need for self-actualization, achievement, and sense of value; these lead to job satisfaction as described in Herzberg's two-factor motivational theory on job satisfaction and job dissatisfaction (Herzberg, 1959). Therefore, measuring employee perception of the effect of incentive programs like CTAP can provide a greater understanding of their sense of value, self-actualization, and achievement; this is an indicator of commitment or increased retention.

Pardee (2002) saw motivation as being the strongest influence on retention because it overlaps both rewards and job satisfaction. Pardee highlighted the four classical motivational theories: (a) Maslow's hierarchy of needs, (b) Herzberg's motivation/hygiene (two-factor) theory, (c) McGregor's X Y theories, and (d) McClelland's need for achievement theory. As cited by Pardee (2002), McClelland's need for achievement theory builds on Maslow's self-actualization theory. McGregor's Theory

Y aligns with much of Maslow's self-actualization theory with regard to level of motivation. It assumes that self-direction, self-control, and maturity control motivation. Pardee stated that reward systems must correspond to intrinsic factors if employees are to be motivated. Satisfying extrinsic factors is commonly used to motivate workers, but these theories show that such efforts do not lead to motivated workers.

Regarding the question of how organizational leaders best use their employee development and retention resources, Collins (2021) reported that resource-based views support high commitment to HR strategies and competitive advantage. Considering resources supports greater employee commitment through investment in employee career enhancement programs. To better understand the impact of government policy, standards, and market competition on building the cybersecurity workforce, Alwan (2019) studies the strategies used to build cybersecurity talent and the difficulties of identifying educational gaps that drive cybersecurity talent shortages. The study looks at the effect of gaps in cybersecurity education and awareness that aggravate the shortage of STEM-skilled employees, and increase competition that can impact retention, especially in government organizations such as the NSA. The philosophy of interpretivism is based on norms and values of an employee's peer or social groups; it also addresses multiple views from the participant’s perspective. Interpretivism provides a deeper understanding of the topic and allows for the use of abduction strategy to explore and understand the social phenomenon (Rasid et al., 2019).

In organizations that offer tuition assistance, recent studies examine the effect of organizational HCM strategies, motivational factors, and job satisfaction on retention

(Lumina Foundation, 2016, 2022). These studies allow interpretation of how the foundational theories may apply to the study of CTAP and employee decisions to stay. Many of the studies referenced focused primarily on ROI and a few noted intangible results such as employee perception of program value. The Lumina Foundation (2016; 2021) studies provide insight into how they used employer-based incentives. They review Cigna's investment of approximately $138,000,000 a year into the training and development of their U.S. workforce.

The 2021 Lumina Foundation study on employer-subsidized education programs highlights many large employers that use employee educational programs, such as tuition assistance. Of those, several also use such programs as tax write-offs. However, Cigna views their educational reimbursement program, ERP, as an investment in their talent-development strategy for recruitment and retention of employees. Cigna's program is described as a "high-quality learning pathway to increase both employers' ability to compete and employees' access to career opportunity and higher wages" (Lumina Foundation, 2016, p. 5).

The report's authors analyzed 2 years of outcomes generated by the Cigna program (Lumina Foundation, 2016). The findings also include intangibles that show that, over the 2-year study period, employees in the tuition-reimbursement program are also promoted more frequently, seize new career opportunities at a higher rate, and on average realize a 43% salary boost. One study participant noted, "Returning to school is stressful enough without the burden of cost hanging over you," and stated she would repay Cigna's investment in her future by remaining with the company (Lumina

Foundation, 2016). In the report, Cigna states that they believe employee retention results in significant cost savings and increases broader interest in their tuition assistance program. The study shows that tuition program enrollees were 8% more likely to remain with Cigna than employees who chose not to participate. The study results were aligned more closely with the three foundational theories that frame this study; these use interviews and surveys to measure perceptions of Cigna's ERP; the results support and align with the ROI results.

The large Comm Technology Lumina Foundation (2021) study focuses on measuring the impact of its investment in growing the education of its employees through its Tuition Reimbursement Program (TRP). From 2010 to 2013, the Comm Technology TRP produced an overall 144% ROI because it avoided talent management costs because of higher rates of promotion, transfers, and lower rates of absenteeism. Employees participating in TRP received, on average, annual wage increases that were at least 41% greater than nonparticipating employees. TRP also helps foster needed talent. Both the Cigna and Comm Technology studies (Lumina Foundation, 2016, 2022) focus on ROI but provide employee perspectives on retention and career advancement. These studies provide evidence of the need for further research on the effects of tuition assistance on job satisfaction and retention of cybersecurity employees from the participant's perspective.

Recent studies on employee perspective have been conducted in conjunction with quantitative studies on organizational ROI to measure the alignment with ROI results. A follow-up Lumina Foundation (2023) study uses interviews and a survey, capturing over

200 employee responses; the results show that most employees have positive views of ERP and believe that it results in improved career opportunities and outcomes. Employees also believe that participating in ERP leads to increased confidence, motivation, knowledge, skills, personal achievement, as well as recognition and support from managers and colleagues. The Lumina Foundation study also shows the importance of linking their programs as a strategic human capital tool and overall strategy. The study finds that some employees used ERP to gain degrees and further their careers; however, better communication about the program would have increased understanding of the link between program participation and internal opportunities; this would give participants a clearer view from their degree to a future career at Cigna.

Al-Qathmi and Zedan (2021) discuss the effect of IMS on employee motivation and job satisfaction which can result in a greater sense of employability, commitment, and retention. They describe employers who use incentive tools to increase employee growth and performance in their HCM strategy and how this increases levels of employee job satisfaction and commitment to the employer. The ability to ascertain the effect of tuition assistance or reimbursement programs on retention is a key factor that the NSA leadership is missing.

Summary and Conclusions

The literature on employee retention and work commitment focuses on how career decisions are influenced by employer commitment to employees through HCM strategies and policies that include salary, position, self-actualization, as well as employer-based training and development. Studies by authors such as Al-Qathmi and

Zedan (2021) focus on the motivating factors of IMS and the effect on turnover in the cybersecurity field. The study helped uncover the relationship between satisfaction, turnover, and the desire for career growth through continuing education and opportunities.

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To better understand what influences employees' career decisions, I reviewed the literature on human motivational factors. Cohen (2003) applies existential theory to explain career decision-making in the context of individual stability and opportunities over the lifespan of the employee, providing additional means for framing research and further study of the relationship between opportunity and career choice. Akkermans et al. (2019) examines the phenomenon of employability as a mediator in the employee-employer commitment relationship. Akkermans also investigates the relationship between perceived investments in HR practices, and workplace commitment using the principles of SET (Homan, 1958). Akkermans introduces perceived employability as a

potential mediator to incorporate career perspective, the paper argues that perceived investments in HCM practices enhance feelings of employability, which then create increased workplace commitment.

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based on norms and values of an employee's peer or social groups; addresses multiple views from the participant's perspective and increases understanding. Interpretivism provides a deeper view of the topic and allows for the use of abduction strategy to explore and understand the social phenomenon (Rasid et al., 2019).

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Al-Qathmi and Zedan (2021) discuss the effect of IMS on employee motivation and job satisfaction which can result in a greater sense of employability, commitment, and retention. They describe employers who use incentive tools to increase employee growth and performance in their HCM strategy and how this increases levels of employee job satisfaction and commitment to the employer. The ability to ascertain the effect of tuition assistance or reimbursement programs on retention is a key factor that the NSA leadership is missing.

Chapter 3: Research Methods

Introduction

In this chapter, I describe the research methodology I employed to address the study's research question: How do cybersecurity employees participating in the CTAP program at the NSA perceive the program's impact on their career development and on their continued stay with the agency? The methodology includes a description of the research design, participant selection, data collection procedures, data analysis techniques, and ethical considerations. The study was approved by the Walden University Institutional Review Board (IRB) and the DoD Human Research Program (HRP).

The target population for this study consists of NSA cybersecurity employees who have participated in NSA's CTAP and are employed by NSA for a minimum of 5 years. Drawing on the principles outlined in Mitchell et al. (2001) theory of job embeddedness and further developed in Holtom and Darabi (2018); the present study also draws on the skill-weights theory of firm-specific human capital as established in Manchester (2012). In short, this study tries to answer the question of why employees stay with their jobs at the NSA after using CTAP. To select participants for this research I used an online survey and database query to identify a pool of employees that met the criteria for the study. One on one interviews were the primary source for data collection, and the NSA's human capital and learning management databases provided secondary sources for data collection. The data analysis focuses on data derived from participant interviews. To provide context, demographic data, such as length of employment,

educational level, use of CTAP, number and type of courses taken, and schools attended were used to increase understanding of program use.

Research Design and Rationale

To address the research question, I employed a qualitative single case study design. This approach allowed for an in-depth exploration of the complex interplay between employee perceptions, organizational culture, and career trajectories (Yin, 2018). By conducting one-on-one interviews with cybersecurity employees who have utilized CTAP, the study aimed to uncover the program's impact on individual career decisions and its broader implications for organizational retention strategies. Understanding the factors that motivate employees to stay with the NSA is crucial, especially in a field where talent is highly sought after. The RQ was, how do cybersecurity employees participating in the CTAP at the NSA perceive how the program affects their career development and their continued stay with the agency?

Central Concepts and Phenomenon

I explored how the NSA's CTAP influences cybersecurity employees' decisions to remain with the agency. By examining the phenomenon of employee choice and its relationship to job embeddedness, the study aims to understand the factors that contribute to employee retention and satisfaction. Key concepts explored in this study include:

- job embeddedness: the degree to which employees are connected to their organization, both socially and structurally.
- employee satisfaction: the overall level of contentment and fulfillment that employees derive from their jobs.

- organizational commitment: the extent to which employees identify with and are committed to their organization.

By investigating these concepts, I sought to provide insights into the effectiveness of CTAP as a tool for attracting and retaining top talent within the cybersecurity field. A central conceptual issue in this study is how employees perceive employer-provided tuition assistance and how it relates to their social, financial, and intellectual needs. The theory of job embeddedness highlights the importance of these factors in influencing employee commitment. While some employees may view tuition assistance as a valuable benefit that supports their career aspirations, others may perceive it as a strategic tool used by organizations to retain talent and increase productivity. Employees' perceptions of tuition assistance can significantly impact their job satisfaction, career decisions, and overall attitude towards their employer. By exploring these conceptual issues, this study aims to contribute to a deeper understanding of how employer-provided tuition assistance programs can be used to enhance employee satisfaction, retention, and organizational performance.

I adopted an approach drawing on both post-positivist and interpretivist philosophical traditions. The post-positivist perspective acknowledges the complexity of reality and recognizes the limitations of objective knowledge. By embracing multiple ways of knowing, this approach allows for the interpretation of data from various sources, including participant interviews and archival data. The interpretivist perspective, on the other hand, emphasizes the importance of understanding human behavior from the participants' own perspectives. Through in-depth interviews and analysis of qualitative

data, this study aims to uncover the subjective meanings and experiences of NSA cybersecurity employees who have utilized the CTAP program.

The interpretivist approach, which emphasizes understanding human behavior from the actor's perspective, aligns well with the qualitative case study design. By conducting in-depth interviews with CTAP participants, this study aims to explore their subjective experiences and perceptions of the program's impact on their career decisions and organizational commitment. Through a qualitative case study, we can gain valuable insights into the nuanced factors that influence employee retention and satisfaction, ultimately contributing to a deeper understanding of the human element in organizational decision-making.

I selected a qualitative case study design to delve into the experiences and perspectives of CTAP participants. By conducting in-depth interviews and analyzing qualitative data, this study aims to identify patterns and themes that shed light on the impact of tuition assistance on employee retention and satisfaction. This approach allows for a nuanced understanding of the human factors influencing employee decisions and organizational outcomes. It also provides a means to better understand human choice, or why employees that use CTAP choose to stay or resign from the NSA from their perspective.

The qualitative case study design allows for an in-depth exploration of the experiences and perceptions of a specific group of NSA cybersecurity employees who have utilized the CTAP program. By focusing on a single case, this study enables a detailed examination of the complex interplay between individual experiences,

organizational culture, and external factors. The inductive approach to data analysis, which involves identifying patterns and themes from the data, allows for a deeper understanding of the subjective meanings and motivations of participants. This approach is particularly well-suited to exploring the complex social phenomenon of employee choice and its relationship to factors such as job satisfaction, organizational commitment, and career aspirations (Litzky, 2006). One-on-one interviews were conducted to gather data on participants' perceptions of employer-provided tuition assistance, its impact on career choices, and its role in fostering a sense of connection to the organization (Mitchell et al., 2001). The findings of this research will contribute to a better understanding of the factors influencing employee retention and satisfaction and can inform organizational decision-making regarding incentive programs like tuition assistance.

The skill-weights theory of firm-specific human capital (Manchester, 2012) and job embeddedness theory (Mitchell et al., 2001) provided the theoretical framework for this study. The theory of job embeddedness, which focuses on the factors that influence employee retention, including social ties, organizational commitment, and perceived sacrifice, was particularly relevant to this research. By investing in employee development through on-the-job training and education, such as tuition assistance programs, organizations can enhance their human capital and foster a sense of employee ownership and commitment. CTAP, by providing financial support for education and professional development, plays a crucial role in increasing employees' human capital and, consequently, their value to the organization. However, the relationship between

increased human capital and job embeddedness, particularly in terms of social capital, remains an area for further exploration. This qualitative case study, guided by Yin's (2014) framework, focused on a single group of 12 NSA cybersecurity employees who participated in CTAP between 2019 and 2023. Through in-depth interviews, the study aimed to explore how CTAP influences employees' perceptions of their careers and their decision to remain with the NSA. By analyzing the qualitative data, the study sought to identify patterns and themes that shed light on the program's impact on employee retention and satisfaction.

Conceptual Framework

I drew upon the skill-weights theory of firm-specific human capital (Manchester, 2012) and job embeddedness theory (Mitchell et al., 2001) to understand the factors influencing employee retention at the NSA. The skill-weights theory of firm-specific human capital emphasizes the importance of investing in employee development and creating a positive work environment. Job embeddedness theory highlights the role of social ties, organizational commitment, and perceived sacrifice in influencing employee retention. Additionally, Herzberg's two-factor theory of motivation and Homan's SET provide valuable insights into the psychological and social factors that drive employee behavior. By examining the interplay between these theories, this study aims to uncover the underlying mechanisms through which CTAP contributes to employee retention and satisfaction. This study explored participant perception of CTAP as an incentive for continued commitment to employment beyond 5 years with the NSA. The qualitative analysis looked for patterns and themes to better understand how tuition assistance is

perceived as a retention tool. This study is significant in that it explored how the NSA's tuition assistance program policies directly influenced organizational commitment and retention of the NSA's cybersecurity workforce. The study also provided, through evidence-based policy analysis, evidence supporting future policy decisions or actions on the use of CTAP for employee retention.

Implications for Future Research

The case study methodology employed in this research provides a foundation for future studies exploring the impact of tuition assistance programs on employee retention within the intelligence community and other sectors. By replicating this study with different organizations and employee populations, researchers can gain a deeper understanding of the factors that influence employee retention and develop evidence-based strategies to enhance organizational performance. Additionally, longitudinal studies can be conducted to track the long-term effects of tuition assistance programs on employee career trajectories and organizational commitment.

Role of the Researcher

As the primary researcher, I designed the study, selected participants, collected and analyzed data, and interpreted the findings. To ensure the ethical conduct of the research, the study was approved by the Walden University IRB and the DoD HRP. In collaboration with NSA's college program administrators, eligible participants were identified based on specific criteria. The researcher also reviewed survey responses to select potential participants, adhering to ethical guidelines and ensuring confidentiality. To mitigate potential biases, this study adhered to the principles of reflexivity, as outlined

by Ravitch and Carl (2016, 2021). By acknowledging the researcher's social location and positionality, it was possible to identify and address potential biases that may have influenced the research process. To further minimize selection bias, the CTAP administrator, independent of the researcher, identified potential participants based on the established criteria. This approach ensured a more objective selection process. To ensure the highest ethical standards, the researcher strictly adhered to the informed consent procedures. The study was conducted in accordance with relevant ethical guidelines, including the protection of participant confidentiality. No personally identifiable information was shared with CTAP decision-makers, and appropriate measures were taken to anonymize and encrypt data. Additionally, the researcher maintained a clear separation of roles, ensuring that CTAP administration and participant selection were conducted independently.

As a former chief of staff at the National Cryptologic School, I leveraged knowledge of HR, talent management, and the internal university system to identify potential participants. However, I acknowledged the potential influence of prior roles on the research process. To mitigate this, I engaged in a rigorous process of reflexive analysis, examining personal biases and assumptions throughout the study. By maintaining self-awareness and adopting a critical perspective, I strived to ensure the objectivity and validity of the findings. In order to enhance the rigor and validity of the study, detailed documentation was maintained throughout the research process, including detailed journals and notes. Participants were selected based on their responses to an

online survey and their willingness to participate, ensuring a transparent and unbiased selection process.

By following these procedures, the study aimed to minimize potential bias and ensure the trustworthiness of the findings. To maintain objectivity, the researcher's input was integrated into the broader data analysis process, ensuring that all data was treated equally and coded consistently. An NSA Senior Advocate also reviewed the data summary to provide an external perspective and further mitigate potential bias. To address any potential conflicts of interest arising from the researcher's role as a former Chief of Staff at the NSA NCU, participants were assured that their participation in the study would have no impact on their access to or utilization of CTAP.

To ensure the ethical conduct of this research, several measures were taken. Participants were fully informed about the purpose of the study, the potential risks and benefits, and the confidentiality measures in place. Informed consent was obtained from all participants prior to their involvement in the study. Additionally, I adhered to the principles outlined in the *Belmont Report* (National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research, 1979), including respect for persons, beneficence, and justice. By following these ethical guidelines, the study aimed to protect the rights and well-being of all participants. To mitigate potential reluctance to share negative information, a full disclosure of the purpose of the study and the measures in place to protect participant confidentiality was shared with participants. This disclosure was provided in the survey, the email invitation to participate (see Appendix A), and at

the beginning of each participant interview. All participants were given the opportunity to review and validate the study results prior to their publication.

As the researcher, I found it critical to adhere to the ethical principles outlined in the *Belmont Report* (National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research, 1979). I was committed to upholding the boundaries between research and practice, ensuring respect for individual autonomy, promoting justice and fairness, and maintaining transparency and informed consent. Furthermore, all potential risks and benefits associated with the selection of participants, as emphasized in the *Belmont Report* were considered.

Methodology

As the primary researcher, I designed the study, selected participants, collected and analyzed data, and interpreted the findings. In collaboration with NSA's college program administrators, eligible participants were identified based on specific criteria. The researcher also reviewed survey responses to select potential participants, adhering to ethical guidelines and ensuring confidentiality. To mitigate potential biases, this study adhered to the principles of reflexivity, as outlined by Ravitch and Carl (2016, 2021). By acknowledging the researcher's social location and positionality, it was possible to identify and address potential biases that may have influenced the research process.

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Participant Selection Logic

To identify potential participants, a data query of the NSA training and college program database was conducted to identify active CTAP users between 2019 and 2023. A purposive sampling approach was employed to select participants who met the specific criteria of the study, including their willingness to participate. Initial recruitment involved sending email to 100 potential participants identified as users of CTAP by the CTAP administrator outlining the study's purpose, researcher information, timeline, confidentiality measures, and participation requirements. Of the 100 I received 30 responses interested in participation and requesting additional information about the study. A follow-up email was then sent to the 30 interested employees, providing a link to a selection survey to determine if the interested employee met the study criteria as outlined (see Appendix A) and a copy of the informed consent form to ensure understanding of the role of the participant and researcher. The survey included four yes-

or-no questions to assess eligibility and willingness to participate in one-on-one interviews (see Appendix B).

Of the 30 employees that showed interest in participating, 20 met the study criteria and were scheduled for interviews. Of the 20 scheduled interviews 12 were conducted due to conflicts in availability and study timeline. The 12 participants were interviewed and included in the study analysis and results. As the researcher I concluded based on reaching saturation, that 12 interviews provided me with sufficient data. I found participant answers became repetitive and did not provide additional or new information or insight after conducting the 12 interviews. I determined 12 interviews provided sufficient information for development of categories and themes.

I primarily collected data through one-on-one interviews, four of which were conducted in person and eight virtually using Zoom. The interviews allowed for in-depth exploration of participants' experiences and perceptions allowing for discussion, note taking and observation of each participant. Additionally, secondary data, such as demographic information and CTAP usage data, were collected from the NSA's human capital and learning management databases. By combining these data collection methods, the study aimed to gain a comprehensive understanding of the impact of CTAP on employee retention and satisfaction. All participants were provided with a copy of the informed consent form before they began the interview. Interviews were conducted in a private and confidential setting. Participants were given the opportunity to ask questions at any time during the interview.

To ensure a diverse and representative sample, I purposefully selected participants based on their STEM skills, cybersecurity expertise, and years of experience with the CTAP program. An initial pool of 20 interested participants was identified through an online selection survey. From this pool the final 12 study participants were selected based on their responses, interest, willingness to participate and alignment with the study's criteria. Additionally, the NSA CTAP administrator identified potential participants from the agency's database, further refining the sample to include individuals with a range of experience and expertise. The time frame for the database searches was 2019–2023. The search elements included the following:

- total number of participants;
- number of certifications or degrees received;
- academic institutions attended;
- CTAP funded by participant and institution;
- number and percentage of resignations of participants; and
- demographics: employment status, grade, degree, skill field, years of service, hire dates, tuition reimbursement cost, number of courses taken, and credits received, and institutions attended.

This rigorous selection process helped to ensure that the study captured the diverse perspectives of NSA cybersecurity employees and provided valuable insights into the impact of CTAP on employee retention and satisfaction.

Instrumentation

The primary data collection method for this qualitative exploratory case study involved in-depth interviews with participants who had used the CTAP program. To develop the interview questions, I leveraged the Society for Human Resource Management's (2023) Stay Interview protocol, which I adapted to align with the specific research objectives and to elicit information related to the impact of CTAP on employee retention and satisfaction. To establish rapport and encourage open communication, I conducted the interviews in a relaxed and confidential setting over a 3-week period. Interview scheduling was tailored to participant availability and employed open-ended questions that elicited detailed, long-form responses. These questions were designed to encourage participants to share their opinions, perceptions, use and personal account of their CTAP experience. The research question that underpinned this qualitative case study addressed the current limitations identified in the literature review and recognized as gaps in research. Specifically, the study focused on employee perception of CTAP and their decision to stay or resign based on their sense of job embeddedness as gathered through interviews. Interview notes were captured using voice transcription software and subsequently transferred to a centralized database designed to aggregate responses from both surveys and interviews.

Procedures for Recruitment, Participation, and Data Collection

The target population for this study consisted of NSA cybersecurity analysts who participated in the CTAP program between 2019 and 2023. To ensure a diverse and representative sample, a purposive sampling strategy was employed to select a potential

participant pool of 20 employees meeting the specific criteria of the study. The selected participants represented a diverse range of cybersecurity roles and experience levels, ensuring a rich and varied data set. This sample size aligns with the recommendations of Creswell (2017), who suggested that a sample size of 10 to 20 participants is typically sufficient for qualitative studies.

Purposive sampling was employed to identify participants who had direct experience with the CTAP program and could provide valuable insights into its impact on their careers and organizational commitment. Participants were selected based on preestablished criteria, including their role within the NSA, years of experience, and level of engagement with the CTAP program. Data saturation, the point at which no new significant themes emerge from the data (Jahja, 2018), was anticipated to be achieved within 10 to 12 interviews. By carefully selecting participants and monitoring data saturation, the study aimed to ensure the quality and reliability of the findings.

Data collection was conducted through a two-phased approach. An initial screening survey (see Appendix B) was administered to identify potential participants who met the study criteria. Subsequently, in-depth interviews were conducted with a selected group of participants, using a semi-structured interview protocol (see Appendix C). To accommodate participants in various global locations, eight interviews were conducted virtually using Zoom. All interviews were conducted and recorded in unclassified areas with participant consent.

In-depth interviews allowed for a deeper exploration of participants' experiences, perceptions, and motivations and the use of open-ended questions were used to elicit

detailed responses and to probe for further information. By combining these two data collection methods, the study aimed to gain a comprehensive understanding of the impact of CTAP on employee retention and satisfaction. To determine the optimal sample size, the principle of thematic saturation was employed. Data collection continued until no new significant themes emerged from the analysis of interview transcripts (Ravitch & Carl, 2016). This iterative process ensured that the sample size was sufficient to capture the full range of experiences and perspectives of CTAP participants.

Data Analysis Plan

Data analysis is an integral component of this qualitative study, it serves as the cornerstone for extracting meaningful insights from the collected data. I used thematic analysis to identify, analyze, and report patterns (themes) within data. The overarching objective of data analysis is to identify recurring patterns, themes, and concepts within the data that collectively address the study research question. To facilitate this process, I employed computer-assisted qualitative data analysis software (CAQDAS) to systematically organize, code, and analyze the data. Thematic analysis coding, a specific CAQDAS technique, was utilized to assign labels to discrete segments of data. These coded segments were then grouped or categorized based on their similarities or differences, forming broader thematic categories.

By identifying patterns and concepts that consistently emerged across the data, allowed interpretation of the underlying meaning and drew conclusions about the data's implications. Creswell (2017) aptly defines data analysis as "the process of making meaning from qualitative data" (p. 185). In this endeavor, a thematic analysis was

adopted to systematically code and categorize the responses based on their content, emerging themes, and participant observations. This approach involved delving into the threads of participants' responses, carefully examining the structure of their narratives and their reactions to the posed questions. Data analysis, as aptly described by Jahja (2018), entails the transformation of raw data into meaningful information. To enhance the credibility and validity of the findings, triangulation and member checking were employed. Triangulation involved using multiple data sources and methods to corroborate findings. Member checking was used to validate the interpretation of data with participants. By implementing these strategies, the study aimed to ensure the trustworthiness and rigor of the research.

Data collection encompassed semi-structured interviews, organizational data from the NSA's authoritative HR database to assist in identifying themes and patterns (Saldaña, 2018). Each interview was meticulously transcribed to facilitate thorough analysis. The transcripts were uploaded to a CAQDAS ATLAS.ti, to aid in identifying codes, themes, and managing data collection and analysis processes (Saldaña, 2018). To document procedures and decisions for each step of the study, I maintained a comprehensive journal to include field notes. This plan incorporates the use of Atlas.ti as the CAQDAS software. Data collection continued until data saturation was reached, as indicated by the emergence of recurring themes and patterns in the data. After conducting 8-10 interviews, no new significant themes were identified, suggesting that the sample size was sufficient to capture the relevant information. This approach ensured the reliability and validity of the study findings.

Data Triangulation

To enhance the credibility and validity of the findings, triangulation was employed by incorporating multiple data sources. In addition to the primary data collected through interviews, secondary data from the NSA's HR database was utilized. This secondary data included information on participants' employment history, educational background, and CTAP utilization. By triangulating data from multiple sources, the study aimed to provide a more comprehensive and accurate understanding of the impact of CTAP on employee retention and satisfaction.

To protect participant confidentiality, no personally identifiable information was collected or shared. However, secondary data from the NSA's HR database were utilized to corroborate and contextualize the findings. This data included information on participants' employment history, educational background, and CTAP utilization. By triangulating data from multiple sources, the study aimed to enhance the credibility and validity of the findings. This study employed a multifaceted approach to data collection, encompassing surveys, in-person and virtual interviews, and participant demographic data from CTAP and human capital databases of record. The utilization of multiple data sources facilitated triangulation, a methodology that enhances the comprehensiveness and accuracy of findings related to employer-provided tuition assistance (Denzin, 2012). Additionally, to ensure the auditability and credibility of the research, an independent review of the study data summary was conducted by the NSA workforce analytic group, requesting their expert assessment of any potential issues or biases in the data.

Data Management

Data collected is secured and participant privacy protected by the researcher in the following manner. Interviews were conducted in a private, unclassified location external to participants' work area, to prevent others overhearing participant responses. Interview data collected were encrypted and maintained in an external secure cloud accessible only to the researcher for study purposes. I will report data in aggregate and no personnel information will be shared with others**.** Data collected were numerically coded to protect against devolving any relationship to participants and codes will be stored separately from the collected data. Data are to be maintained in an encrypted file for 5 years then disposed of using prescribed technical methods

Issues of Trustworthiness

Acknowledging the inherent challenges of trustworthiness in qualitative research (Creswell & Creswell, 2017), this study prioritizes valid and credible data collection and analysis. Participants were explicitly informed that participation was voluntary and carried no negative consequences for their employment or future CTAP utilization. To ensure data validity, I employed several strategies were employed. Member checking involved sharing findings with participants for feedback on interpretations and accuracy, enhancing credibility of conclusions. I incorporated peer review by seeking diverse perspectives by sharing data analysis with the CTAP program manager and Talent Management, Learning & Development, and Workforce Analytics teams to identify potential biases or errors.

Using personal and extensive experience and familiarity with the NSA culture and environment (35 years at NSA involved in development programs) offered unique advantages. This insider knowledge facilitates accurate interpretation of CTAP program standards, policies, and the participant selection process. It also fosters trust among stakeholders and enables a deeper understanding of the research context. To enhance the credibility and validity of the study and to minimize bias, I employed several strategies:

- Triangulation: Multiple data sources, including interviews and document analysis, were used to corroborate findings and ensure a comprehensive understanding of the phenomenon.
- Reflexivity: I engaged in a process of self-reflection to identify and mitigate potential biases that may have influenced the research process.
- External Review: The study was reviewed by other researchers and experts to obtain feedback and ensure the rigor of the methodology and analysis.

By combining these strategies, I aimed to minimize bias and produce trustworthy findings.

Ethical Procedures

In conducting this study at an organization, the NSA, where I was also employed, I acknowledge the potential for ethical concerns regarding participant confidentiality and potential impacts on participants' continued involvement in CTAP. Recognizing the sensitive nature of the research topic and the personal data being collected, the researcher is committed to upholding the highest ethical standards throughout the study. This commitment is reflected in adherence to the *Belmont Report* and NSA's ethical policies

and procedures, and the implementation of rigorous procedures to manage potential conflicts of interest and maintain participant anonymity. Each participant and their data are treated with beneficence, justice, and equity by prioritizing ethical research practices and ensuring participant well-being. The researcher aims to contribute valuable insights while safeguarding the privacy and professional standing of all participants. All data collected is maintained in a secure password protected database program on the researchers unclassified system accessible by the researcher only. To reiterate, no PII data will be stored outside of NSA's systems of record.

To minimize potential ethical concerns, I implemented several proactive measures. Participants received comprehensive information about the research's nature and their rights as participants before providing informed consent. This includes details about the research's purpose, the procedures involved, the potential risks and benefits of participation, how their information and study responses will be protected and their right to withdraw from the study at any time. I assured the participants that I would safeguard the confidentiality of their identities. This meant that their personal information and any sensitive information they shared were not shared with anyone outside of the research team without participants' explicit consent. To safeguard data security, I stored all collected data in password-protected files and encrypted during any transfer of data files.

I addressed the issue of my leadership role within NSA during the IRB and NSA HRO review processes, and during face-to-face interviews, I focused on cultivating trust and establishing rapport with the participants. By creating an environment of trust, respect, and a comfortable environment, I actively listened to participants' perspectives

and demonstrated genuine appreciation for their time and contributions. Participants were not exploited in any way and asked to engage in any activities that were not in their best interests. Adhering to these ethical principles will ensure this research is conducted in a responsible and ethical manner.

Participants were informed about the research study before granting their consent to participate. This included providing a comprehensive explanation of the study's purpose, the methods employed, the potential risk and benefits, and the measures in place to safeguard their employment status and access to CTAP in the future. Discussions with participants were conducted to ensure that each participant fully comprehended how their identity and personal information was to be protected and that the researcher will refrain from sharing any identifying information about participants with anyone outside of the researcher. As the researcher, I bear the responsibility of protecting participants from harm and did not ask them to engage in any activities that could pose a risk. I obtained IRB approval before conducting the study (approval no. 05-02-24-0578443).

Transparency and Clarification

In recognition as primary researcher and NSA employee, transparency was prioritized in communication by providing detailed clarification throughout the study. This emphasis on transparency was to build trust and encourage participants to feel comfortable sharing their thoughts and feelings honestly. Respecting participant privacy is paramount, and acknowledging that different participants, particularly those with disabilities, may have varying levels of vulnerability. Therefore a sensitive and

individualized approach to safeguard all participants from harm and ensure their continued well-being throughout the research process was applied.

Fostering of Trust and Protection Participants

Building trust was a key focus in the research approach. This included demonstrating respect for participants' privacy by employing rigorous confidentiality measures, being mindful of potential dynamics associated with the dual role and actively mitigating any undue influence over participants. Furthermore, committing to uphold the highest ethical standards, ensuring that the study findings are reported with accuracy and honesty, free from misrepresentation or false claims. Ensuring participant anonymity was strictly maintained throughout data collection, analysis, and dissemination. Participant well-being was prioritized, and no activities were undertaken that might pose any potential risk.

Member Checking and Reflexivity

To further enhance the validity and trustworthiness of the research, I conducted member checking after each interview and upon completion of data analysis. This entails reviewing research notes and findings with participants to ensure accurate representation of their shared experiences and perspectives. This reflective process allowed identification and allowed the addressing of any potential biases or misinterpretations in the analysis, ultimately strengthening the study's integrity and objectivity.

Summary

By employing the methodology outlined in this chapter, I was able to expand the understanding of the phenomenon of choice and job embeddedness using the data

collected from intensive interviews, online surveys, demographic data and CTAP usage data. The goal of the data analysis was to identify patterns, themes, and concepts that helped answer the study's research question. The methodology outlined for conducting this qualitative case study provided a detailed description of the research methods employed to address the research question. The study utilized a single qualitative case study approach to gather open-ended survey responses from NSA employees who have participated in the CTAP program between 2019 and 2023. The survey questions were designed to evaluate how CTAP participants within the NSA cybersecurity workforce perceive the program's impact on their career and personal development.

To ensure the validity and reliability of the research findings, a comprehensive data collection strategy was employed, incorporating primary and secondary data sources, and employing triangulation techniques to corroborate the results. The primary data was collected using a series of questions focused on why participants choose to stay with the NSA, if they feel socially and culturally connected to their job, and how they believe CTAP influences their decision. The modified stay interview questions used are from a well-established interview tool specifically designed for this study. Participants were recruited via email solicitations, their responses to survey questions, and data derived from CTAP records to identify individuals who meet the study criteria.

To mitigate potential biases and safeguard participant confidentiality, all data was handled securely through password-protected storage and de-identification protocols. No personally identifiable information (PII) was collected during the study or utilized in any publications. Participants were provided with detailed information about how their data

was anonymized and protected throughout the research process. Prior informed consent was obtained from participants, ensuring their understanding and approval of these procedures. The NSA was informed about the anonymized data analysis with participant anonymity strictly maintained. As outlined in this chapter, participant selection and recruitment involved identifying and inviting individuals from a pool of employees who met the study criteria and expressed willingness to participate in the study.

The research design proactively addressed potential limitations, including access to CTAP users who have left the NSA and the possible reluctance of participants to discuss resignation plans. To mitigate these challenges, I employed diverse participant recruitment strategies such as using a mixed-methods approach. Participants were given the option to participate in a virtual Zoom or in-person interview for a more nuanced exploration of their perspectives. This dual approach caters to diverse preferences and accessibility needs, potentially increasing overall participation. Additionally, the research design incorporates the need for future follow-up studies designed to specifically target and gather data from former NSA employees who participated in CTAP before their resignation, and multifaceted analysis to examine the influence of multiple factors on the results, including participant demographics, institutional context, and personal experiences to account for potentially incomplete data regarding resignation intentions.

Building trust and confidence is paramount, and I was able to achieve this through open communication, active listening, and by establishing clear boundaries. Upholding legal and ethical standards for participant protection is fundamental, and I adhered to all relevant guidelines and sought informed consent at every stage. All research instruments

were carefully chosen and tailored to the specific research goals and facilitate comprehensive data collection, rigorous analysis, and robust validity measures, ensuring meaningful insights into the impact of CTAP on NSA employee career decisions.

Finally, detailed plans are in place to ensure consistent communication with all participants and sponsors throughout the study. Participants receive interim email updates on the study progress, preliminary findings, and the final report. Additionally, opportunities exist for the participant to provide feedback during data analysis and the dissemination stages. Sponsors were informed of major milestones and provided with the final report, and their ongoing input will be welcomed for future research collaborations.

Chapter 4: Results

Introduction

I examined the perceived value of the NSA's CTAP among cybersecurity employees. By understanding how CTAP influences employees' career development and retention decisions, this research aims to provide valuable insights for policymakers and organizational leaders. Twelve in-depth interviews were conducted with NSA cybersecurity employees who had utilized the CTAP program between 2019 and 2023. Data was collected through a combination of in-person and virtual interviews and analyzed using an inductive qualitative approach. The primary research question underpinning the study was, how do cybersecurity employees participating in the CTAP at the NSA perceive the program's impact on their career development and their continued stay with the Agency? In this chapter, I present the key findings of the study, organized around four major themes: enhanced career opportunities, facilitated professional growth, strengthened employee commitment, and effective recruitment and retention tool. By exploring these themes, this study sheds light on the multifaceted impact of CTAP on employee retention and satisfaction.

Setting

To ensure participant confidentiality and comply with NSA security protocols, interviews were conducted in unclassified locations outside of NSA classified facilities. This allowed for audio recording of the interviews without compromising security requirements. Interviews were scheduled during work hours to minimize disruption to participants' schedules. It is important to note that the study was conducted during the

NSA's promotion cycle, which may have influenced some participants' perspectives on job satisfaction and retention.

Demographics

The study included 12 active NSA cybersecurity employees who participated in the CTAP program between 2019 and 2023. Participants represented a diverse range of STEM and cybersecurity roles within the agency and had been employed with the NSA between 9 and 27 years.

Data Collection

To answer the research question, I collected data after obtaining approval from the Walden University IRB and the NSA/DoD HRP. The IRB approval number is 05-02-24-0578443. To explore the phenomenon of employee perception in reference to CTAP (see Hansen & Vass, 2021), I conducted in-depth interviews with 12 NSA cybersecurity employees who met the study criteria of which participation in the CTAP program between 2019 and 2023 was key. A purposeful sampling strategy was employed to select participants who represented a diverse range of roles, experience levels, and locations within the NSA. The diverse backgrounds and experiences of the participants provided a rich data set for analysis. Informed consent was obtained from all participants prior to the interviews, of which four were conducted face-to-face and eight virtually via Zoom. The interviews were audio-recorded and transcribed verbatim. The transcripts were then uploaded into Atlas.ti for qualitative analysis. To protect participant confidentiality, all personal identifying information was removed from the transcripts, and participants were assigned pseudonyms.

To enhance the richness and validity of the data, secondary data from the NSA's HR database was utilized, including information on participants' employment history, educational background, and CTAP utilization. Triangulation, involving the use of multiple data sources and methods, was employed to corroborate findings and ensure a comprehensive understanding of the phenomenon. The loss of one participant's audio file due to technical difficulty may have limited the depth of analysis in certain areas, the overall impact on the study findings was minimal due to the availability of detailed field notes, researcher transcription and the rich data collected from other interviews. Additionally, the NSA's HR department was unable to provide resignation data by degree, which could have provided further insights into the long-term impact of CTAP. However, the available data, including CTAP usage data and overall agency resignation rates, was sufficient to draw meaningful conclusions about the program's influence on employee retention.

Data Analysis

Following Creswell's (2017) definition of data analysis as the process of interpreting qualitative data, this qualitative case study aimed to explore NSA employees' perceptions of CTAP's value as a retention and recruitment tool. To analyze the qualitative data, a thematic analysis approach was employed to identify recurring patterns and themes across primary and secondary data sets. The interview transcripts were coded and categorized using a combination of manual and computer-assisted methods. Atlas.ti, CAQDAS software was used to facilitate identification of patterns and organization and analysis of the data into categories then themes. Member checking was conducted to

validate the interpretations of the data with participants. By carefully analyzing the data and identifying recurring patterns, the study aimed to gain a deeper understanding of the impact of CTAP on employee retention and satisfaction (see Table 3).

Table 3

Examples of Intentional Codes Based on Interview Questions

Open codes	Repeated word	Participant	Excerpt
Employees focus on career growth and development	Career, opportunity, promotion, influence, change, skill development, contributing	P9 P3	"I have moved up in my career where I started as a high school work study…gotten a different perspective on what different organizations do." "So I love what I do, I love the mission, I love NSA's mission, I love the diversity of this mission like I said."
Sense of belonging, part of a unique mission,	Support, learn, moral, stay, opportunities, commitment, financial, growth, stability, care, encourage, debt	P9 P10	"We've been able to apply those things, the things you learn, the concepts. It enhances the skills if you know the CTAP, it is a present, and then you apply it against the mission." "That means a lot." "I want to be able to feel like I'm contributing, but there's my knowledge, whether it's my leadership."
I believe CTAP is valuable.	Debt, investment, support, being able to get a degree, time to work, and family	P4 P5	"Definitely helps when they're willing to cover costs." "I really value the after-hours program with a family you have bills…" surprise those sort of policies so it becomes more like …symbols of our shared values as employer and employees"
Support motivates employees to stay	New challenges, opportunities for growth, choice, stability, sense of value	P1 P2 P9	I've been able to do 5 or 6 different career fields here at NSA …through my interest and then the education undergrowth…" "Yeah, I am lucky to have people that push me to do whatever I want to do, pick and decide my career, and boost me into positions."
Continual improvement	Certifications, technical skills, changing technology, and threats	P9 P5	"This program allows you a lot of growth. I've taken advantage, and I've mentored several mentees that are now taking advantage. So it just gives you the opportunity to have more skills and more knowledge that you can continue to grow throughout your program. It's awesome."
Factors that influence decisions flexible positions, partners, CTAP		P11 P2	"The agency providing the funds for you is a real game changer…" Backing and support from the Agency, you kinda create a sense of loyalty." "Academically and professionally, I like the fact that they offer a lot of education opportunities for employees…keeps you fresh"

Note. CTAP = College Tuition Assistance Program; NSA = National Security Administration.

By applying the theoretical frameworks of job embeddedness, two-factor motivation, and self-efficacy theory an initial analysis identified codes that could be grouped into eight subcategories (see Table 4). While categories represent broad concepts identified within data, the eight subcategories identified provided more specific aspects that developed broader categories, essentially providing a deeper level of detail within the analysis; subcategories can include themes related to attitudes, behaviors, experiences, or perceptions.

Table 4

Examples of Subcategorization of Codes

Subcategory	Code	Participant	Excerpt
Enhanced career opportunities	Availability of CTAP Opportunities, growth diversity in positions, federal employment	P1 P7	"I've always looked at myself as being more technical. So I kind of wanted to do the technical but being a technical director requires having a degree so getting my degrees." "I greatly appreciate that requirement on the agency's part right to make sure that we are actively using this benefit to drive operational outcomes."
Continual improvement	Rigorous criteria, skills update, support & and flexibility, new challenges	P7	"I had very strong support, so all of my supervisors, and I've had a number of different supervisors, all of them were very supportive in terms of approving the justifications for my courses in terms of allowing me to flex my work schedule to go to class to identify … I think that's a positive. I think that's really healthy and positive and supports the long-term sustainability of the program.
Employee development	Self-development, mentoring, and development programs	P7	"I feel like I'm constantly pushing it, when I'm mentoring or when I'm talking with employees…" "Potentially, so Drexel had a program I was interested in. I was way out of budget, right and again. I was not willing to pay out-of-pocket."
Perception of CTAP	Career opportunities, contentment, development, advancement decision to stay, funds	P6 P7 P10	"Although … as a directorate does a good job supporting development…" "The funds allowed me to go, thank you, to accomplish that dream. "I have found that folks really do care, and that's a huge benefit, as well as walking away with a degree at the end and not having to pay much out of pocket."
Factors influencing leave decisions	Stagnation, continuing service agreements, not valued relationships, lack of community, sense of not contributing	P9	"I want to be able to contribute to the Agency. I think when you get stagnant, I have to be developing and giving back… I think there's a lot of good things that are interesting here." "The hope that I see some of my mentees growing, that's a nice feeling. It's the one thing about leaving when you've made relationships, and some folks depend on you. I hate to leave them behind, so those things are big."
Impact of CTAP on retention		P5 P9 P11	"About the sense of loyalty that I feel to the agency because they've made such a significant investment, I would be very willing to sign lengthier service agreements in exchange for this tuition assistance, and I would be much more willing to do that than to see a program lose funding, CSA undermine your loyalty right it sort of a relationship of affinity" "…becomes more and almost like a value like those are symbols of our shared values as employer and employee."
Motivation to stay	Community, mission, retirement, opportunity, growth, learning, changing locations, jobs, benefits, job security.	P2 P9	"The hope that I see some of my mentees growing, that's a nice feeling. It's the one thing about leaving when you've made relationships and some folks depend on you, I hate to leave them behind, so those things eat big." "Definitely, the leave benefits CFP, the ability to PCS, job security, the flexibility I can be where I want my supervisors are all have always been awesome, so I've been able to do what I wanted really sell yeah" "I have found that folks really do care, and that's a huge benefit and that to walk away with a degree."
Employee retention		P7 P3 P8 P1	"So I've been there a long time, so a lot of the fact this stability has always been one of the greatest drivers, …love of the mission is, believes and supports it in the way that we do because we believe the mission in them." "So I love what I do. I love the mission. I love NSA's mission, and I love the diversity of this mission; like I said, I've been able to do 5 or 6 different career fields here at NSA" "That they have job security, other people who would see education that is going to help pay for education, I think it definitely is impacting some deciding factors about coming to the agency."

Further analysis of interview responses identified patterns and frequencies that were grouped into subcategories (see Table 4) leading to larger categories that aligned with four key themes, as detailed in Table 5.

Table 5

Themes Based on Categories

Category	Theme
Career opportunity and development Continual improvement Employee development Job choice Promotion Leadership/decision influence Expertise and knowledge	Theme 1: Enhanced Career Opportunities: CTAP expanded career opportunities, job choices, and professional growth.
Importance of maintaining and developing skill relevancy Creating expertise Knowledge transfer Grow future leaders.	Theme 2: Facilitated Professional Growth: Agency investment in employees through CTAP fostered a sense of financial and professional security.
The leadership of the Agency is investing in its workforce. Agency benefits show commitment to workforce well-being. Tuition payment 20/20 for education	Theme 3: Strengthened Employee Commitment: Agency support for employee growth and work–life balance, including financial assistance and flexible work arrangements, increased commitment.
Development programs The ability to get a college degree and work is essential to attracting and growing STEM employees High school work study 20/20 work schedules to education Graduate fellowship (Tuition & time F/T) College summer COOP	Theme 4: Effective Recruitment and Retention Tool: CTAP is a valuable tool for attracting and retaining talent, contributing to increased job satisfaction and commitment.

The four themes in Table 5 are as follows:

- enhanced career opportunities: CTAP empowered employees to pursue new positions and acquire new skills, leading to career advancement and increased job satisfaction.

- facilitated professional growth: By alleviating financial burdens and enabling better work–life balance, CTAP contributed to increased financial security and professional stability.
- strengthened employee commitment: The agency's investment in employees' education and development, through programs like CTAP, fostered a sense of belonging and commitment to the organization's mission.
- effective recruitment and retention tool: CTAP played a crucial role in attracting and retaining top talent in the competitive cybersecurity field, contributing to improved organizational performance.

Table 6 shows the code-concurrence and categories for theme development.

Table 6

Code-Concurrence and Categories for Theme Development

		Motivation to... 275	Motivation to s... 64	Impact of CTA... 202	Employee per... 213	Career Develo... 59
Employee perception of CTAP	213	201	65	151		43
Employee perception of CTAP: Career Opportunities	13	15	1	14	15	1
Employee perception of CTAP: Decision to stay	19	21	10	13	21	11
Employee perception of CTAP: Financial Compensation	31	32	1	31	33	2
Employee perception of CTAP: Flexibility	19	19	9	16	19	2
Employee perception of CTAP: Gratitude	8	8	8		8	
Employee perception of CTAP: Influence on decision to stay	43	43	30	13	43	6
Employee perception of CTAP: Positive Perception	141	140	64	92	143	28
Employee perception of CTAP: Supportive supervisors	41	42	17	42	42	17
Factors influencing leave decisions: Financial Compensation	36	36	1	35	37	3
Impact of CTAP on retention: CTAP	46	29		46	1	6
Impact of CTAP on retention: Employee Retention	66	66	1	67	50	13
Impact of CTAP on retention: Financial Compensation	33	35	1	34	35	2
Impact of CTAP on retention: Flexibility	34	35	11	35	35	10
Impact of CTAP on retention: Skill improvement	28	28		28	28	
Impact of CTAP on retention: Supportive supervisors	42	43	17	43	43	18
Impact of CTAP on retention: Work-life balance	6	5		6	5	6
Motivation to stay: Career Opportunities	12	14	1	13	14	1
Motivation to stay: Continuous education	42	42				
Motivation to stay: Continuous Learning	18	18		17	1	6
Motivation to stay: continuous learning culture	11	11		11		
Motivation to stay: CTAP	29	29		29	1	6
Motivation to stay: Financial Compensation	32	34	1	33	34	2
Motivation to stay: Flexibility	30	30	12	27	30	10
Motivation to stay: Gratitude for investment	19	19	19		19	
Motivation to stay: Increased DLP T scores	22	22				
Motivation to stay: Self-study program	31	31				
Motivation to stay: Skill improvement	37	37		37	35	2
Motivation to stay: Supportive supervisors	38	39	15	39	39	16

Note. This table demonstrates the resulting Atlas.ti, computer assisted data analysis of study participant interview data.

Figure 3 is a word cloud showing the most common words in participant responses.

Figure 3

CTAP Study Word Cloud

Note. CTAP = College Tuition Assistance Program.

These findings provide valuable insights into the impact of CTAP on employee retention and satisfaction. By understanding the factors that influence employee decisions to stay with the organization, policymakers and organizational leaders can develop effective strategies to attract and retain top talent. The themes directly address the research question: How do cybersecurity employees participating in the NSA's tuition assistance program perceive its impact on their career development and retention at the Agency?

Evidence of Trustworthiness

I acknowledge several limitations of the study. First, the reliance on a self-selected sample of current employees may limit the generalizability of the findings. Second, the inability to access data on former employees who utilized CTAP restricts the ability to draw definitive conclusions about the program's impact on retention. Additionally, social desirability bias may have influenced participant responses, potentially affecting the accuracy of the data. To mitigate these limitations, the researcher employed rigorous data collection and analysis techniques, including the use of in-depth interviews and reflexive journaling. By acknowledging these limitations and considering the potential impact of biases, the study aims to provide a nuanced and accurate understanding of the factors influencing employee retention within the NSA. I used two key approaches to address subjectivity and bias:

- multifaceted analysis: Examined the influence of multiple factors on the results, including participant demographics, institutional context, and personal experiences. This multi-dimensional approach helped identify potential patterns and mitigate the limitations of subjective data.
- reflexive data analysis: Carefully considering and addressing potential participant bias, particularly around their hesitation to share information about potential resignation intentions. This critical reflection during analysis enhances the trustworthiness and integrity of the findings.

Credibility

To enhance the credibility of the study, member checking was conducted by sharing transcribed interviews and summary results with participants for verification. Additionally, CTAP administrators were provided with coded data for review and validation of employment and CTAP usage information. Data saturation was achieved after 10 interviews, confirming that no new or significant patterns or themes emerged from subsequent interview data.

Transferability

This study provides a detailed analysis of the impact of CTAP on NSA's cybersecurity employees, offering insights that may be applicable to other organizations with similar talent acquisition and retention challenges. While the focus is on a specific agency and skill set, the findings highlight broader trends in employee motivation, engagement, and career development.

Dependability

A 13-question semi-structured interview protocol was developed and approved by university researchers. Consistent interview procedures were followed to ensure reliability. The interview setting was designed to foster a comfortable and confidential environment for participants to share their experiences.

Confirmability

To establish that findings were not biased, and ensure the trustworthiness of the findings, member checking was conducted by sharing a summary of the results with each

participant for verification. Additionally, detailed field notes were maintained to document observations and reflections, minimizing the potential for researcher bias.

Results

In this qualitative single case study, where I explored the impact of the NSA's CTAP on employee satisfaction and retention. By understanding the factors that influence employee retention, organizations can develop effective strategies to attract and retain top talent, particularly in the competitive field of cybersecurity. Twelve in-depth interviews were conducted with NSA cybersecurity employees who used CTAP between 2019 and 2023. The data collected through interviews was analyzed using thematic analysis to identify key themes and patterns (see Table 7). Four primary themes emerged from the data:

Enhanced Career Opportunities

CTAP empowered employees to pursue new positions and acquire new skills, leading to career advancement and increased job satisfaction. Participants viewed CTAP as a catalyst for career advancement, enabling them to pursue new positions, acquire new skills, and advance professionally within the NSA. The program was seen as instrumental in increasing their competitiveness for promotions and career advancements. Many participants had utilized CTAP to obtain multiple degrees, further enhancing their skill sets and career prospects. P6 stated,

> The funds allowed me to go, thank you to accomplish that dream." Oh yes, well, that's this. I'm growing every day. Yeah, there are other organizations I would consider. I'm preparing to apply for another tenured position that would be

different than my current job, and I am. I'll also have several opportunities to move to a different agency. As a senior, those opportunities, having the degrees, have supported me over the years. Being able to apply for those or being asked to take those positions.

P1 stated,

I'm using CTAP to get my degree. It's allowed me to apply for the technical director's position in my office, which is what I currently hold getting that position has brought me closer and into more technical conversations outside of my direct organization with my alpha plus 3 leadership and even the A + 2 leadership to the discuss the topics that are at A+2 some topics that impact the Agency, some topics that impact customers outside the Agency so and it's allowed me to really enhance my knowledge personally, but also enhance the knowledge of others by bringing that technical experience.

P2 stated,

The 20/20 program was the best program ever. I couldn't have asked for anything better. That was perfect; how did that write? What did the 20/20 program give you well, I was able to. I didn't school online to flex anything as much as possible, but it gave me so much time to focus on my schoolwork. When I look at my friends, I was in school like they were working and constantly doing schoolwork or not working at all and not being able to do anything because they were doing schoolwork. Thanks for work, whereas I had the best of those words where I was able to work part-time when I set a schedule and have flexibility if I

needed it while also going to school and having my classes paid for and getting paid. When I tell people about that, they're like, how is this a thing? But it is, and I feel like people don't know about it enough, and even the master's program that is so beneficial, and you're off full-time. I definitely looking to do that in the future once I figure out what I want to master in the good way I'm putting it, yes I did the fellow's program arrive first masters so I would tell you that it is worth looking into, and I will do it and then give enough flexibility, but it's awesome.

P9 stated,

We've been able to apply those things, the things that you learn the concepts to and the skills it enhances the skills if you know the cop, a percent is, and then you applied against the mission. Um, I believe it's just I believe in education, so I will always be that person 2 to tell any young person. To go back to school, and that's a, that's that that's the certification program. That's any program. Anything that helps sustain a person and make them grow, I'm all for it.

P3 stated,

To be what I am, I'm pursuing, and that meant I started out of UMBC in the engineering program, just it didn't offer a lot of flexibility, and this was after going back to college after 20 years of being out.

P10 stated,

You know, having this program allowed me to go back and not have to worry. Was it a question of could I get the grades? It was more like how I am going to

afford this, and can I get the grants, and you know, work going to an online program?

Facilitated Professional Growth

By alleviating financial burdens and enabling better work–life balance, CTAP contributed to increased financial security and professional stability. Participants valued CTAP as a crucial tool for maintaining and enhancing their cybersecurity skills, particularly in a rapidly evolving technological landscape. The program's financial support allowed them to pursue advanced education without incurring significant debt, thereby increasing their financial stability and job security. Additionally, the supportive work environment and encouragement from leadership and peers played a significant role in their ability to balance work, family, and education, further contributing to their overall well-being and professional success.

P1 stated,

100% agree that what we need to know is always changing, and now with AI, I mean, the Agency has stood up organizations, just for AI research, AI development, AI development, so I mean, we have the research organization. I think it looks at 1 thing to cryptocurrency, and there's been organizations looking at trying to utilize the Blockchain methods they use in cryptocurrency. Crypto, why and um, it's forensic in CSD so it's always important to keep up.

P3 stated,

I've always done collections, so I was like. Okay, let's do that. The one thing NSA has always allowed is education to underpin growth and the exchange of

knowledge in order to help you be the best that you can be, so I'm saying all of this, and through all of this, they gave me the training, they afforded me the responsibility to you go to school and get educated and gain the skill level required.

P5 stated,

I'm using CTAP to get my degree. It's allowed me to apply for the technical director's position in my office, which is what I currently hold getting that position has brought me closer and into more technical conversations outside of my direct organization with my alpha plus 3 leadership and even the A + 2 leadership to the discuss the topics that are at A+2 some topics that impact the Agency, some topics that impact customers outside the Agency so and it's allowed me to really enhance my knowledge personally, but also enhance the knowledge of others by bringing that technical experience.

P9 stated,

I want to be able to contribute to the Agency. I think when you get stagnant, you know, people may think people don't want to work sometimes, some people don't, but I'm the type of person I have to stay busy. I have to be developing and giving back; that's one of the things in career development and career advancement. I think there are a lot of good things here that are interesting. So that you can always, like I said, you can always move around, so I think that's good, and the other thing that keeps me here is.

P10 stated,

The funds allowed me. Yeah, the funds allowed me to go. Thank you for accomplishing that dream; that was part of it. A large part of it is the finances, you know, if you don't have the money, it is not going to happen.

P7 stated,

Me for sure what it would affect my decision about sort of with that whole value proposition of government employment, so I would certainly think about finding other opportunities to make more money to offset the costs right to get through the program and now to pay back trying what I would out on that 1st year. And then, as far as peers go, I think it would. The limits would reduce the opportunities for folks to go out and get training in something that maybe not everybody needs, right? So I appreciate that our internal training is driven by requirements, right? It isn't sort of a zero-sum game, and there are limits to the way that those courses are decided upon and administered. And so when somebody needs something that's maybe, you know, not as usually needed across-the-board, they could, they would probably be stuck if they didn't have this opportunity to go and do the one-offs so that they feel they need to close gaps within their own experience.

P5 stated,

Absolutely I had very strong support so all of my supervisors and I've had a number of different supervisors well I've participated The CTAP, all of them were very supportive in terms of approving the justifications for my courses in terms of allowing me to flex my work schedule to go to class to identify I mean

> when I was in the 20/20 I had to actually move to a different role I mean I was a division chief and couldn't really do a division chief job part-time and they worked with me and allowed me to stay in the org and do a different program manager job for those last couple months so the support has been very real and very tangible I'd also say that My supervisor has been pretty rigorous too in applying the criteria and kind of following the process you know I've had a few classes that you know I had supervisors kind of have a conversation with me and ask the question of like okay really though how is this going to affect your current work duties I think that's a positive I think that's really healthy and positive and supports the long-term sustainability of the program.

Strengthened Employee Commitment

The agency's investment in employees' education and development, through programs like CTAP, fostered a sense of belonging and commitment to the organization's mission. Participants expressed a sense of belonging and commitment to the NSA, attributed to the supportive work environment, leadership encouragement, and opportunities for professional growth facilitated by CTAP. The program fostered a positive organizational culture and contributed to increased employee satisfaction and loyalty.

P3 stated,

> So I love what I do, I love the mission, I love NSA's mission, and I love the diversity of this mission. Like I said, I've been able to do five or six different career fields here at NSA, and anytime one seemed to go into listen, what I could

> matriculate to something that through my interest and then the education undergrowth, so I am looking into. It's becoming a life coach for people and supporting women."
>
> P10 stated,
>
> So I would say in every place that I have worked, maybe not the first one when I came into the Agency, but the 2 after that, I absolutely had top-notch, top-level support all the way." Participants' responses shared their sense of the Agency's commitment to their continual learning beyond just paying tuition. Consistent support from their leaders and peers to continue their education and balance their family time away from work made them feel grateful. It gave them a sense of value and care for their peers, belonging to the community, and a reason to stay. P10 stated, "So, I would say that in every place that I have worked, maybe not the first one when I came into the Agency, but the two after that, I absolutely had top-notch, top-level support all the way."

Effective Recruitment and Retention Tool

CTAP played a crucial role in attracting and retaining top talent in the competitive cybersecurity field, contributing to improved organizational performance. Participants emphasized the importance of CTAP as a strategic tool for attracting and retaining top talent, particularly in the competitive field of cybersecurity. They highlighted the program's role in enhancing employee satisfaction, boosting morale, and fostering a strong organizational culture. By offering financial support for education and

professional development, CTAP demonstrates the agency's commitment to its workforce, leading to increased loyalty and retention.

P10 stated,

> You know, having this program allowed me to go back and not have to worry. Was it a question of could I get the grades? It was more like "how am I going to afford this, and can I get the grants, and you know, working going to an online program?

P4 stated,

> I think it is. I've worked with people that really don't do a lot of training; they haven't gone back to school for people that have taken as many classes as me and are very into it. I think you're going to retain people that want to build upon what we already have as a foundation and really expand it and go along with your technologies, you're going to have people that are more passionate about it. The more you know about something, the more passionate you are.

P2 stated,

> To be able to try different things, I mean, I've had like 3 or 4 different roles just in a couple of years that I've been here, able to PCS what I haven't had the option to do that, but I really I'm dying to leave Maryland, and then just job security or so many PCS is a wonderful thing you definitely got your stay on that when you want to.

P9 stated,

> In my case, the Agency keeps me with the government, and I guess the last thing would be the hope that I see some of my mentees growing. That's a nice feeling. I see them growing, and I feel like I'm there for them. It's the one thing about leaving when you've made relationships and some folks depend on you, I hate to leave them behind, so those things eat big.

These findings align with the theoretical frameworks of job embeddedness, two-factor motivation, and self-efficacy theory. By providing financial support for education and professional development, CTAP fosters a sense of employee ownership and commitment, strengthens social ties within the organization, and enhances job satisfaction. (see Table 7).

Table 7

Themes based on Responses to Interview Questions

Interview Questions	Themes
R.Q.: How do cybersecurity employees participating in the tuition assistance program at NSA perceive how the program affects their career development and their continued stay with the Agency?	
1: Where do you see yourself in 1, 2, 3 years? 2: Do you see opportunities for growth and advancement at NSA? 3: Are there other organizations or careers that are more tempting to you?	**Theme 1**: Enhanced Career Opportunities The value of CTAP increased career opportunities, choice of position, professional growth, and influence for agency employees.
4:What factors are important to your staying at NSA? 6: How has using tuition assistance benefited you? 7. How important is it to maintain and grow your skills in cyber to mission? 11. Besides CTAP, what other benefits do you use or enjoy working at NSA?	**Theme 2**: Facilitated Professional Growth**:** CTAP in creating financial and professional stability through agency investment in their employees
5: Do you get leadership and peer support to continue growing your skills and career? 8: Has being able to use CTAP impacted your overall connection to the mission and your sense of being part of the NSA? 9: Are you more likely to stay or leave if tuition assistance is unavailable? 13: If tuition assistance programs were	**Theme 3**: Strengthened Employee Commitment: CTAP increased commitment based on the Agency's investment and support for employee growth and continued learning, both financially, time commitment away from work for course work, and ability to have a life balance

discontinued, how would that affect you and your peers?	
10: Would you have joined the NSA if benefits like tuition assistance were unavailable? 12: Do you believe the program is valuable to retaining cybersecurity employees? If so, to what extent? 13: If tuition assistance programs were discontinued, how would that affect you and your peers?	**Theme 4**: Effective Recruitment and Retention Tool Value and impact of CTAP as a recruitment and retention tool, continuation of the program as a retention benefit and recruitment tool

Note. From the study analysis of participant responses and thematic association analysis

Overall, participants perceived CTAP as a valuable tool for career advancement and retention. It fostered a sense of belonging and commitment to the NSA, influencing decisions to remain with the organization. The findings support the continued investment in CTAP as a strategic tool for retaining cybersecurity talent within the intelligence community. Participants highlighted the significant role of CTAP and other agency-sponsored education programs in fostering career growth and personal development. They emphasized the importance of continuous learning in the rapidly evolving cybersecurity landscape and the need for programs like CTAP to maintain and enhance relevant skills. Furthermore, participants underscored the value of strong leadership and peer support in facilitating their educational pursuits. They expressed gratitude for the agency's commitment to their professional development and work–life balance, which contributed to a sense of belonging and loyalty.

By reducing the financial burden of higher education, CTAP empowers employees to invest in their future, leading to increased job satisfaction, improved

performance, and a stronger commitment to the organization. The results of this study have broader implications for organizations in both the public and private sectors. By understanding the factors, from an employee's perspective, that influence employee retention, organizations can develop targeted strategies to improve employee satisfaction, reduce turnover, and enhance organizational performance.

Summary

In this qualitative case study, I explored the impact of the NSA's CTAP on employee retention and satisfaction. By understanding the factors that influence employee retention, organizations can develop effective strategies to attract and retain top talent, particularly in the competitive field of cybersecurity. Through in-depth interviews with 12 NSA cybersecurity employees, this study identified four key themes:

- enhanced career opportunities: CTAP empowered employees to pursue new positions and acquire new skills, leading to career advancement and increased job satisfaction.
- facilitated professional growth: By alleviating financial burdens and enabling better work–life balance, CTAP contributed to increased financial security and professional stability.
- strengthened employee commitment: The agency's investment in employees' education and development, through programs like CTAP, fostered a sense of belonging and commitment to the organization's mission.

- effective recruitment and retention tool: CTAP played a crucial role in attracting and retaining top talent in the competitive cybersecurity field, contributing to improved organizational performance.

This study, conducted within the unique context of the NSA, provides valuable insights into the impact of tuition assistance programs on employee retention in a highly specialized and demanding field. By considering the evidence-based findings, policymakers and organizational leaders can make informed decisions about the allocation of resources and the implementation of talent management strategies. The results of this study have broader implications for organizations in both the public and private sectors. By understanding the factors that influence employee retention, organizations can develop targeted strategies to improve employee satisfaction, reduce turnover, and enhance organizational performance.

Chapter 5: Discussion, Conclusions, and Recommendations

Introduction

Using a qualitative case study I explored the impact of the NSA's CTAP on employee retention and satisfaction. By understanding the factors that influence employee retention, organizations can develop effective strategies to attract and retain top talent, particularly in the competitive field of cybersecurity. I identified four key themes:

- CTAP empowered employees to pursue new positions and acquire new skills, leading to career advancement and increased job satisfaction thereby enhancing career opportunities
- By alleviating financial burdens and enabling better work–life balance, CTAP contributed to increased financial security and professional stability and facilitated professional growth.
- The agency's investment in employees' education and development, through programs like CTAP, fostered a sense of belonging and commitment to the organization's mission strengthening employee commitment.
- CTAP played a crucial role in attracting and retaining top talent in the competitive cybersecurity field, contributing to improved organizational performance and serves as an effective recruitment and retention tool.

This study, conducted within the unique context of the NSA, provides valuable insights into the impact of tuition assistance programs on employee retention in a highly specialized and demanding field. By considering the evidence-based findings, policymakers and organizational leaders can make informed decisions about the

allocation of resources and the implementation of talent management strategies. The results of this study have broader implications for organizations in both the public and private sectors. By understanding the factors that influence employee retention, organizations can develop targeted strategies to improve employee satisfaction, reduce turnover, and enhance organizational performance.

Interpretation of the Findings

I drew upon the theoretical frameworks of human capital, job embeddedness, and SET to guide the research design and data analysis. the skill-weights theory of firm-specific human capital emphasizes the importance of investing in employee development, while job embeddedness theory highlights the role of social ties, organizational commitment, and perceived sacrifice in influencing employee retention. SET provides a framework for understanding the reciprocal relationship between employees and organizations, the skill-weights theory of firm-specific human capital emphasizes the importance of strategic workforce planning and the effective utilization of human capital. The job embeddedness theory focuses on the factors that influence employee commitment and retention, including social bonds, structural constraints, and sacrifices. Additionally, Homan's SET was considered, which highlights the reciprocal nature of relationships between individuals and organizations. These theoretical frameworks guided the development of the research questions and the design of the study.

Building upon the concepts of job embeddedness and human capital, this study explored how the NSA's CTAP program influences employee retention. Mitchell et al. (2001) work on job embeddedness highlights the importance of organizational and

supervisory support in fostering employee loyalty. This study examined how the reciprocal relationships between employees and the organization, as well as shared values and goals impact an employee's decision to stay with the NSA. Interviews with 12 NSA cybersecurity employees who had utilized the program between 2019 and 2023 were used to gain deeper insights into the impact of CTAP. Four themes emerged from the participant interviews perceived as influencing employee retention and satisfaction within the context of the NSA.

Theme 1: Enhanced Career Opportunities

Participants perceived CTAP as a catalyst for career advancement, enabling them to pursue new positions, acquire new skills, and improve their job performance. This aligns with Herzberg's two-factor theory of motivation, which suggests that job enrichment and opportunities for growth can significantly impact employee satisfaction and motivation. Additionally, CTAP's role in enhancing employees' skills and knowledge base contributes to their increased human capital, which is a key component of Mitchell et al.'s job embeddedness theory. By investing in employees' education and development, CTAP empowers them to take on greater responsibilities and increase their contribution significantly to the organization.

Theme 2: Facilitated Professional Growth

Participants perceived CTAP as a valuable investment in their professional development, contributing to increased financial security and career stability. By alleviating the financial burden of higher education, CTAP enabled participants to pursue advanced degrees and certifications, enhancing their skills and marketability. This, in

turn, led to increased job security, greater opportunity for promotion, and career satisfaction.

Theme 3: Strengthened Employee Commitment

Participants perceived CTAP as a catalyst for increased employee engagement and organizational commitment. The program's positive impact on work–life balance, career development, and financial stability contributed to a sense of belonging and loyalty to the NSA. By addressing both the intrinsic and extrinsic needs of employees, as outlined in Herzberg's two-factor theory of motivation, CTAP fostered a positive work environment and enhanced employee satisfaction.

Theme 4: Effective Recruitment and Retention Tool

Participants perceived CTAP as a valuable tool for attracting and retaining top talent, particularly in the competitive field of cybersecurity. The program's financial support for education and professional development allowed employees to enhance their skills and advance their careers within the agency. Additionally, CTAP contributed to a positive work environment and a strong sense of organizational commitment, further reinforcing employee retention.

The findings align with Alderfer's (1969) ERG theory and supports the philosophy of employability and job embeddedness, both which highlight the importance of social ties, organizational commitment, and perceived sacrifice in influencing employee retention. By offering opportunities for growth and development, CTAP strengthens these bonds and reduces the likelihood of employees seeking employment elsewhere. Maslow's hierarchy of needs highlights the fundamental human need for

physiological safety and basic necessities. This basic need is intertwined with an employee's sense of belonging, personal and professional aspirations, and overall job satisfaction and retention. By addressing these fundamental needs, organizations can create a more positive work environment and foster employee loyalty.

Mitchell et al.'s job embeddedness theory provides a valuable framework for understanding the factors that influence employee retention. This theory suggests that employees are more likely to stay with an organization when they have strong social ties with colleagues, perceive a good fit between their skills and the job, and feel committed to the organization's mission. Additionally, the costs of leaving, such as financial implications or disruption to personal life, can also influence retention decisions.

In the context of CTAP, the program's ability to enhance job embeddedness is evident. By providing financial support for education and professional development, CTAP helps employees develop valuable skills and advance their careers within the organization. This increased skill set, and career progression can strengthen employees' social ties with colleagues and supervisors, as well as their commitment to the organization's mission. Furthermore, CTAP leaders can reduce the perceived costs of leaving the NSA by providing financial support and flexibility. By alleviating financial burdens and accommodating work–life balance, the program can make it less attractive for employees to seek opportunities elsewhere. Ultimately, CTAP's positive impact on employee retention can be attributed to its ability to enhance job embeddedness by strengthening social ties, increasing job satisfaction, and reducing the perceived costs of leaving the organization.

Limitations of the Study

Although this study provides valuable insights into the impact of CTAP on employee retention, several limitations should be acknowledged. First, the reliance on a relatively small sample of current employees may limit the generalizability of the findings. Second, the inability to access data on former employees who utilized CTAP restricts the ability to draw definitive conclusions about the program's impact on retention. Additionally, social desirability bias may have influenced participant responses, potentially affecting the accuracy of the data. To address these limitations, future research could employ a larger and more diverse sample and incorporate longitudinal studies to track the long-term impact of CTAP on employee retention and career trajectories. By acknowledging these limitations and considering the potential impact of biases, the study aims to provide a nuanced and accurate understanding of the factors influencing employee retention within the NSA.

Recommendations

To further enhance the understanding of the impact of CTAP-like programs on employee retention and satisfaction, the following recommendations are suggested:

- comparative studies: Conduct comparative studies across different organizations to identify best practices and assess the generalizability of findings.
- longitudinal studies: Track the career trajectories of CTAP participants over time to evaluate the long-term impact of the program on their retention and job satisfaction.

- mixed-methods research: Combine qualitative and quantitative methods to gain a more comprehensive understanding of employee perceptions and behaviors as well as ROI.
- focus on resigned employees: Conduct exit interviews with employees who have resigned to explore their reasons for leaving and the role of CTAP in their decision-making process.
- exploration of interacting factors: Investigate how CTAP interacts with other factors, such as organizational culture, leadership, and compensation, to influence employee retention and satisfaction.

By addressing these recommendations, future researchers can provide valuable insights for policymakers and organizations seeking to implement effective talent management strategies. In addition, the study results can assist in use and expansion of programs to develop cybersecurity skills increasing the opportunity to improve national security and improve the competitive market for high demand STEM workers.

Implications

The findings of this study have significant implications for policymakers and organizational leaders. Key insights include

- the importance of employee perception: Recognizing the significant impact of employee perceptions on retention, organizations should prioritize initiatives that enhance job satisfaction, career development, and a sense of belonging.
- the role of tuition assistance programs: CTAP-like programs can be effective tools for attracting, retaining, and developing talent. By investing in

employees' education and professional growth, organizations can foster a positive work environment and strengthen employee loyalty.

- the need for evidence-based policymaking: To make informed decisions about talent management strategies, organizations should rely on empirical evidence rather than anecdotal information. By conducting rigorous research and evaluating the impact of various interventions, organizations can optimize their human capital strategies.

The results of this study have broader implications for organizations in both the public and private sectors. By understanding the factors that influence employee retention, organizations can develop targeted strategies to improve employee satisfaction, reduce turnover, and enhance organizational performance.

Conclusion

I explored the impact of the NSA's CTAP on employee retention and satisfaction. By understanding the factors that influence employee retention, organizations can develop effective strategies to attract and retain top talent, particularly in the competitive field of cybersecurity. The findings of this study highlight the significant role of CTAP in enhancing employee career opportunities, alleviating financial burdens, fostering a sense of belonging, and promoting organizational commitment. Participants emphasized the importance of continuous learning and the value of agency-sponsored education programs in maintaining and enhancing relevant skills. They also expressed gratitude for the supportive work environment and flexible work arrangements provided by the NSA.

This study of the NSA and the employee perception of CTAP and commitment to stay provides valuable insights into the impact of tuition assistance programs on employee retention in a highly specialized and demanding field. By considering the evidence-based findings, policymakers and organizational leaders can make informed decisions about the allocation of resources and the implementation of talent management strategies, such as tuition assistance programs. The results of this study can provide both public and private sector organizations foundational data on the relationship of employee perception and job embeddedness on recruitment and retention. By understanding the factors that influence employee retention, organizations can develop targeted strategies to improve employee satisfaction, reduce turnover, and enhance organizational performance. By conducting rigorous research and evaluating the impact of HR programs, organizations can make informed decisions and allocate resources effectively. A multidisciplinary approach, involving researchers from various fields such as HR management, psychology, and organizational behavior, can provide a more comprehensive understanding of the factors influencing employee retention.

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Appendix A: Email Invitation

Email Invitation for NSA College Tuition Assistance Program Study Participants

Subject line: College Tuition Assistance Program Users: Volunteer for 30 – 45 Minute Interview on the College Tuition Assistance Program (CTAP)

(U) There is a new study seeking insights from current NSA cybersecurity professionals who have participated in the NSA College Tuition Assistance Program, CTAP. I would like to hear about your experience, including your reasons for using the program.

(U) For this study, you are invited to share your experiences and perceptions on how the employer offered tuition assistance might have influenced your career decisions and help better understand how employer provided tuition assistance programs, like the NSA's CTAP, affect employees' educational attainment, career advancement, and job retention

About the study and requirements for volunteers:
(U) The study will consist of one 30–45-minute interview that will be audio recorded, and to protect your privacy I will not share any names or details that identify you or any other participant in the study. Volunteers must be an active NSA cybersecurity employee with a minimum of 5 years of consecutive service. In addition, volunteers must have a history of receiving tuition assistance from the NSA's CTAP between 2019 and 2023.

(U) This interview is part of the doctoral study for Marta Benitez-Guzman, a Ph.D. student at Walden University and interviews are planned to take place between May and June 2024.

(U) Please email the researcher, Marta Benitez-Guzman at either marta.benitezguzman@waldenu.edu or [redacted] if interested in volunteering for the study.

Sincerely,

Marta

Follow On Email Invitation to Non- Responders **for NSA College Tuition Assistance Program Study Participants**

Subject line: ***Response Requested*** **-** 30 – 45 Minute Interview of the NSA's College Tuition Assistance Program Users

(U) There is a new study seeking insights from current NSA cybersecurity professionals who have participated in the NSA College Tuition Assistance Program, CTAP. I would like to hear about your experience, including your reasons for using the program.

(U) For this study, you are invited to share your experiences and perceptions on how the employer offered tuition assistance might have influenced your career decisions and help better understand how employer provided tuition assistance programs, like the NSA's CTAP, affect employees' educational attainment, career advancement, and job retention

About the study and requirements for volunteers:
(U) The study will consist of one 30–45-minute interview that will be audio recorded, and to protect your privacy I will not share any names or details that identify you or any other participant in the study. Volunteers must be an active NSA cybersecurity employee with a minimum of 5 years of consecutive service. In addition, volunteers must have a history of receiving tuition assistance from the NSA's CTAP between 2019 and 2023.

(U) This interview is part of the doctoral study for Marta Benitez-Guzman, a Ph.D. student at Walden University and are planned to take place between May and June 2024.

(U) Please email the researcher, Marta Benitez-Guzman at either marta.benitezguzman@waldenu.edu or [redacted] if interested in volunteering for the study.

Sincerely,

Marta

Appendix B: Participant Selection Survey

Participant Selection Survey

(U) You are receiving this survey link because you have expressed interest in a study of NSA's college tuition assistance program (CTAP), have participated in CTAP between 2019 and 2023 and are in a cybersecurity related work role or position. The purpose of this research study is to understand the relationship between CTAP and employee commitment. Participation is voluntary and will not affect your use of the program.

(U) Note: Please read and acknowledge the attached Informed Consent form before starting the survey.

Selection Questions:

1. Have you been employed by the NSA for 5 or more consecutive years? **Yes or No**
2. Have you applied for or received tuition assistance from the NSA college tuition assistance program within the past 5 years (2019 – 2023)? **Yes or No**
3. Are you a member of a science, technology, engineering or math, STEM, Cyber skill community or are in a cybersecurity related position? **Yes or No**
4. Have you read and acknowledged the informed consent form agreeing to be contacted by the study researcher, Marta Benitez-Guzman, Ph.D. Candidate, to schedule and complete a study interview? **Yes or No**

(U) Participation in this study is voluntary, and you can withdraw at any time. Your personal information will be kept confidential and used only for research purposes, all personally identifiable information will be removed before reporting. To secure your

information, all data collected will be kept in the researcher's non-NSA secure, encrypted and password protected folders.

(U) All research on human volunteers is reviewed by a committee that works to protect your rights and welfare. If you have questions or concerns about your rights as a research participant, or if you would like to obtain information or offer input, you may contact the Walden University Institutional Review Board at or by email to [redacted]. For questions concerning the sponsor's Human Research Protection Program (HRPP) review, contact the sponsor, NSA Component Office for Human Research Protections at [redacted].

Thank you for your time and consideration.

Contact Information:

For any questions, please contact the researcher at [redacted] or [redacted].

Researcher – Ph.D. Candidate: Marta Benitez-Guzman

Appendix C: Interview Protocol

Interview Questions

1. Where do you see yourself in 1, 2, 3 years?
2. Do you see opportunities for growth and advancement at NSA?
3. Are there other organizations or careers that are more tempting to you?
4. What factors are important to your staying at NSA?
5. Do you get leadership and peer support for continuing to grow your skills and career?
6. How has using tuition assistance benefited you? Or other employees?
7. How important is it to maintain and grow your skills in cyber to mission?
8. Has being able to use CTAP impacted your overall connection to the mission and your sense of being part of NSA?
9. Are you more likely to stay or leave if tuition assistance was not available?
10. Would you have joined NSA if benefits like tuition assistance were not available?
11. Besides CTAP, what other benefits do you use or enjoy working at NSA?
12. Do you believe the program is valuable to retaining cybersecurity employees? If so, to what extent?
13. If the tuition assistance programs were to be discontinued how would that affect you and your peers?
14. Is there anything on college tuition program opportunities you would like to add?