AN ANALYSIS OF TURNOVER INTENTIONS: A REEXAMINATION OF AIR FORCE CIVIL ENGINEERING COMPANY GRADE OFFICERS

THESIS

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Abstract

A potential retention problem is facing company grade officers (CGOs) in the Air Force Civil Engineer (CE) career field. This is due to the stress caused by a demanding workload experienced during a prolonged period of conflict (Iraq and Afghanistan), which is compounded by a reduction in force. The possibility of reduced retention is thus a concern for CE leadership. Based on past research, and the prior study conducted by Riddel (2010), a new model of turnover intentions was developed. The new model expands on the simplified model of turnover (Riddel, 2010) and attempts to focus on key factors that may help explain what drives turnover intentions in the CE CGO community. Two proven methodologies, independent t-testing and structural equation modeling (SEM), were applied independently to first determine how subgroups in the population differ in perception of turnover intentions and next to determine the most important drivers of turnover intentions. The research found, through t-testing, that marital status and age (20s versus 30s) resulted in statistically significant differences in perceptions regarding turnover intentions. Perceived organizational support (POS) was found to be the most significant exogenous variable that influenced the mediator variables (job satisfaction and organizational commitment) and the endogenous variable of turnover intentions. Implications of this research include targeting retention programs at certain groups and understanding which programs are most appropriate for increasing retention.

I would like to dedicate this thesis to my wife and son. Without their support, encouragement, and love I would not be where I am today. Thank you.

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Joshua D. Connell

Table of Contents

List of Figures

List of Tables

AN ANALYSIS OF TURNOVER INTENTIONS: A REEXAMINATION OF AIR FORCE CIVIL ENGINEERING COMPANY GRADE OFFICERS

I. Introduction

Organizations face many problems on a daily basis, such as the lack of monetary resources, shrinking demand for their services or products, and failure to adapt to changing times. Although some problems are unique to certain organizations, the issue of voluntary turnover is relevant to all organizations. Therefore, considerable time and effort has been put forth to understand the factors that influence turnover intentions. It is important to understand these issues because turnover has wide ranging effects on organizations. For instance, if an employee voluntarily leaves, the organization may need to advertise the position, interview candidates, and train the selected employee. Beyond the additional costs incurred, a more important factor is the loss of employee knowledge. If an organization loses too much internal corporate tacit knowledge, they can become noncompetitive, lose their strategic edge, and lack the ability to recreate past success (Leonard & Sensiper, 1998). Turnover could thus prove to be very costly; therefore, the influential factors that driver turnover intentions must be understood. This thesis addresses factors that influence voluntary turnover and how turnover is perceived by different people. Specifically, a highly stressed Air Force population was examined to investigate turnover intentions. The Air Force is experiencing a time of reduced manning, increased deployments overseas, and most recently budget cuts that drive a "do more with less" mentality. These issues could aggravate the retention process further, thereby emphasizing the need to better understand turnover intentions.

Background

During a time of sustained conflict, various career fields within the military are considered high-demand, low-density assets because of the pivotal joint capability they provide to Combatant Commanders and relatively small career fields. One example is represented by the civil engineering (CE) company grade officers (CGOs), who provide a wide array of capabilities for commanders at home and abroad, to include engineering design, construction project management, installation maintenance, emergency management, and Explosive Ordnance Disposal (EOD). However, Air Force CE CGOs are experiencing a lack of manning which is driving high operations tempo. This career field is not the only stressed population during this time of conflict, but it is a population of concern based on the desire to maintain effective, qualified, and knowledgeable leaders.

As reported by the Air Force Times, CE officers are undermanned and stressed as a career field (Tan, 2010). Undermanned refers to a career field that has less than 100% of its authorized positions filled, while a stressed career field is one in which its members experience high operations tempo (OPTEMPO). Often referred to as the deployment-dwell ratio (time deployed vs. time at home station), OPTEMPO is the amount of time, duration, and frequency that military members deploy and are separated from their assigned base for official military missions and training. While the typical deployment-dwell ratio (or dwell time) for Air Force members is 1:2, it was 1:1 for CE officers at the end of 2009 (AFCE, 2009). A 1:1 dwell time means that for every six months deployed, the member typically has six months at home station to engage in normal work activities and spend off-duty time with their families and friends. However, the quality of the time

at home during a 1:1 dwell is further diminished by required pre-deployment training. These training requirements reduce the de facto deployment-dwell cycle to one month pre-deployment training, six months deployed, and five months at home station. In other words, seven months of almost every year is spent away from home and family.

For the CE career field, the increased OPTEMPO was due to the demand for engineers and EOD officers in the conflicts in Iraq and Afghanistan. This demand was amplified due to the fact that 4.6% of CE CGOs are in non-deployable positions (e.g., students, patients, serving outside normal CE structure) (AFPC, 2011) and the increased number of one-year deployments supporting missions in Afghanistan. One-year deployments take qualified CE officers out of the Air Force CE career field. Since this void must be filled by other CE officers, Air Force deployments for CE CGOs become more frequent. These factors stressed the CE officer career field, making it one of the six most stressed Air Force Specialties (AFSs) in the Air Force (AFPC, 2011). In fact, Huffman et al. (2005) found that OPTEMPO was a concern for many junior officers (i.e., CGOs), especially when considering the effects on their families from deployments often regarded as too long and too frequent. This helps explain findings by Huffman et al. (2005) that OPTEMPO is one of the most common reasons military members choose to leave the service. In this highly stressed environment, the Air Force has a need to examine the undermanned and stressed CE CGO population and determine the major influences that drive voluntarily separate from the Air Force and whether all CE CGOs view turnover in the same manner.

For many reasons (to include OPTEMPO, workload, and job danger), a family's negative view of the military life-style could influence turnover intentions. This leads

into interrole conflict which describes work-family and family-work conflict that may exist in some form. An employee's family responsibilities that fall by the wayside due to occupation workload is considered an interrole conflict, which will lead to poor work-family balance and may cause conflict between the employee's work environment and their family life (Stoeva et al., 2002; Bellavia & Frone, 2005). Family members of CE CGOs spend a great deal of time without their significant other, father, or mother. The effects of the separation are compounded by the worry and stress put on the family because of the inherently dangerous nature of the jobs that CE CGOs perform in the combat environment. According to the Air Force Civil Engineer magazine (2010) almanac and Sanders and Meeker (2011), CE officers are supporting 500 Army Corps of Engineers projects outside the wire (off protected U.S. bases) in Afghanistan, and EOD officers are operating in an environment that includes more than 1,625 improvised explosive device (IED) defeat operations per year. For many civil engineers, this frequent exposure to highly dangerous work environments makes their family-work dynamics difficult to manage and may lead to increased turnover intentions.

Although various factors may contribute to voluntary turnover, there are many predictors that can be utilized to understand an employee's turnover intentions. One of the best predictors is comparison of alternatives (Griffeth et al., 2000). For CE CGOs who are approaching the end of their commitment to the Air Force, civilian employment is an attractive alternative that provides stability for their family, more time at home (no deployments), and a potential salary increase from their current officer pay. Stability in a job, when discussing an alternative to the military, refers to a position that does not require relocation on a normal basis, no deployments to war-torn regions, and more

predictable time at home with the family. CE officers are professionals with an accredited degree in engineering who have the potential to obtain their Professional Engineer (PE) licensure during their time in the Air Force. The PE licensure makes these officers very marketable to private engineering firms. Additionally, CE CGOs are very marketable in the private sector as project managers and for general management jobs. These more stable nonmilitary jobs can be attractive to the officer and their family.

Another factor that could affect CE CGO turnover intensions is battlefield stress. By the very nature of their current missions in regions of conflict, CE officers are encountering IEDs, destroyed military and civilian vehicles, and military and civilian casualties; additionally, they are often engaged in battles with enemy forces. This direct contact with the perils of war is an additional stressor on the officers. These facts can change the officer's job satisfaction through shocks experienced at work (Lee et al., 1996, 1999). One such shock on the rise during this time at war is Post Traumatic Stress Disorder (PTSD) from the Iraq and Afghanistan conflicts. For all these reasons, it is important that turnover intentions for CE CGOs be thoroughly investigated.

Problem Statement

Retention of the right people during times of turmoil is an obstacle faced by all organizations. The Air Force is experiencing under manning in the CE officer ranks. The need for excellent future leadership of the CE career field has made CE CGOs a population of concern for current CE leaders due to the undermanned status of the career field (Tan, 2010), the increased number of deployments that are stressing the officers (AFPC, 2011), the amount of money and time invested in each CE CGO for education

and training, and the knowledge that is lost when a CE CGO voluntarily leaves the Air Force.

Research Questions

This research investigated two main questions: Are there any differences in perceptions of (i.e., the way an employee views) turnover intentions among different groups within the CE CGO population? What factors most influence CE CGO turnover intentions? This research effort thus relied on hypothesis testing to answer the questions. The hypotheses, identified in Chapter II, are divided into two distinct groups. The hypotheses used to test for perception differences were null hypothesis tests, while the hypotheses used to test for the most influential factors of turnover intentions were standard single hypotheses based on the relevant research (e.g., based on the research, job satisfaction is negatively related to turnover intentions).

Methodology

This research relied on secondary data from a web-based questionnaire administered to CE CGOs in January and February of 2010 (Riddel, 2010). The survey used a 7-point Likert-type response scale with 118 items measuring the following constructs: job satisfaction, availability of alternatives, interrole conflict, perceived organizational support, organizational commitment, life domain, operations tempo, and turnover intentions. The survey also collected demographic information addressing gender, age, rank, Air Force Specialty Codes (AFSC - their job), active duty service time, marital status, spousal employment, number of children, education level, and professional engineer credentials.

The data was evaluated using two independent methods to answer the research questions. The data was first tested with independent t-testing to determine if there were any differences within the CE CGO sample regarding turnover intentions. Second, the data was analyzed using structural equation modeling (SEM) to measure the effects of several attitudinal variables on turnover intentions. SEM is a statistical technique that combines elements of traditional multivariate models, such as regression analysis, and has applications in the social sciences. Due to the social science applicability of SEM, and the additional rigor that it provides over correlation comparison analysis (Preacher & Hayes), SEM is a powerful tool for analyzing attitudinal data.

Implications

The implications of the research are of importance to the Air Force, the civil engineer leadership, and the future of CE officers. There is already a shortage of Captains and appropriate grade CE officers to fill key positions. Investigating the reasons for turnover in the CE CGO career field during this time of conflict could possibly assist the Air Force in the ongoing manpower and job support provided to the U.S. Army and the combatant commander for multiple missions in the regions of conflict around the globe. The research could also assist the civil engineer leadership in understanding which factors are the most influential in terms of affecting turnover intentions. Knowing these factors could help in maintaining appropriate manning levels of CE CGOs.

Preview

This research attempted to identify correlations affecting turnover intentions in the CE CGO career field. Using survey-based data, independent t-testing, and structural

equation modeling, the research investigated differences in perception, effects of variables, and trends in the data to identify the strongest influences on turnover intentions in CE CGO personnel. The following chapter discusses the literature review conducted on the topic of turnover and turnover intentions. Chapter III presents an in-depth discussion of the survey used to collect the data and the methodologies used to evaluate the data. The results are then presented and discussed in Chapter IV. Finally, the document concludes with a discussion of how these results apply to past research in the turnover field and specifically how they apply to the Air Force.

II. Literature Review

The literature review describes the past research on turnover intentions and identifies the variables that drive turnover intentions. The turnover model from Riddel (2010) is introduced in this chapter since an expanded form of the model was tested and validated during this research. The idea of differences in perceptions is discussed next for several different groups that exist in organizations. The factors of job satisfaction and organizational commitment are then discussed as the mediating predictors of turnover intentions. Three additional independent variables (job availability, organizational, and individual), and their components, also are addressed as directly influencing job satisfaction and organizational commitment; their effect on turnover intentions is also discussed.

Turnover Intentions

Turnover intentions are divided into two categories: voluntary turnover and involuntary turnover. Involuntary turnover is not a decision left up to the employee, but rather one that is handled by the organization (Holtom et al., 2008). Voluntary turnover, in contrast, is the employee's decision to leave the organization when the organization would prefer to retain the employee (Shaw et al., 1998). Turnover represents the most extreme form of workplace withdrawal (Colquitt et al., 2011; Griffeth et al., 2000). Colquitt et al. (2011) provide a good synopsis of why employees choose to leave, which is relevant to the topic of this research:

> Employees can choose to "turnover" for a variety of reasons. The most frequent reasons include leaving for more money or a better career

> opportunity; dissatisfaction with supervision, working conditions, or working schedule; family factors; and health. Note that many of those reasons reflect avoidable turnover, meaning that the organization could have done something to keep the employee, perhaps by offering more money, more frequent promotions, or a better work situation. Family factors and health, in contrast, usually reflect unavoidable turnover that doesn't necessarily signal a lack of commitment on the part of employees.

The question that needs to be addressed is what drives voluntary turnover intentions? Age, tenure, pay, overall job satisfaction, employment perceptions, and a host of other variables have been found to be stable, reliable correlates with turnover (Cotton & Tuttle, 1986). Turnover intentions are driven by many factors; therefore, in order to develop a model that is efficient and effective, it is important to identify the strongest predictors. This will enable the model to predict turnover intentions without relying on all of the predictor variables referenced in the literature, which can be time-consuming to analyze. Employee turnover theories have traditionally suggested that job satisfaction plays an important role with regard to turnover intentions (Boswell et al., 2005; Hom & Griffeth, 1995; Lee et al., 1999; Lee et al., 1996; Mobley, 1982; Steel, 2002; Steers & Mowday, 1981). However, additional factors are also important when attempting to understand employee turnover (Maertz & Campion, 1998). The best predictors of turnover include job satisfaction, organizational commitment, job search, comparison of alternatives, withdraw cognitions, and quit intentions (Griffeth et al., 2000). The constructs that predict turnover intentions will be discussed later in this chapter.

Turnover Models

Several important turnover models have been introduced over the years (March & Simon, 1958; Mobley, 1977; Price & Mueller, 1981; Steers & Mowday, 1981). They all

share the same basic principles of turnover, and they all reflect the importance of job satisfaction and organizational commitment. The basic model concept is explained by Riddel (2010) as "thoughts of quitting (i.e., turnover intentions) arise and employees begin to compare their current job with perceived alternatives when they experience dissatisfaction." Turnover intentions (intent to leave or intent to stay) are supported as the best predictor of actual turnover (Griffeth et al., 2000; Podsakoff et al., 2007). It is also useful to note that negative correlations between an employee's turnover intentions and both job satisfaction and organizational commitment have been demonstrated (Cotton & Tuttle, 1986).

Various models of employee turnover have been presented over the past ten years (Holtom et al., 2008, Riddel, 2010). Holtom et al. (2008) proposed a model of turnover based on a meta-analysis. Just like past models, they suggest that job satisfaction, organizational commitment, perceived alternatives, and job search influence turnover intentions and predict turnover. The turnover model used in this research is an expanded and updated version of the simplified model of employee turnover that Riddel (2010) developed to determine turnover intentions for Air Force Civil Engineering (CE) officers. Figure 1 shows the independent and dependent variables of the model as they influence an employee's turnover intentions. The independent variables are economic characteristics, organizational characteristics, and individual characteristics. The past literature and research for these independent variables will be explored later in this chapter. The dependent variables of job satisfaction and organizational commitment will be discussed in the next section, with the final dependent variable of turnover intentions being the focus of the research.

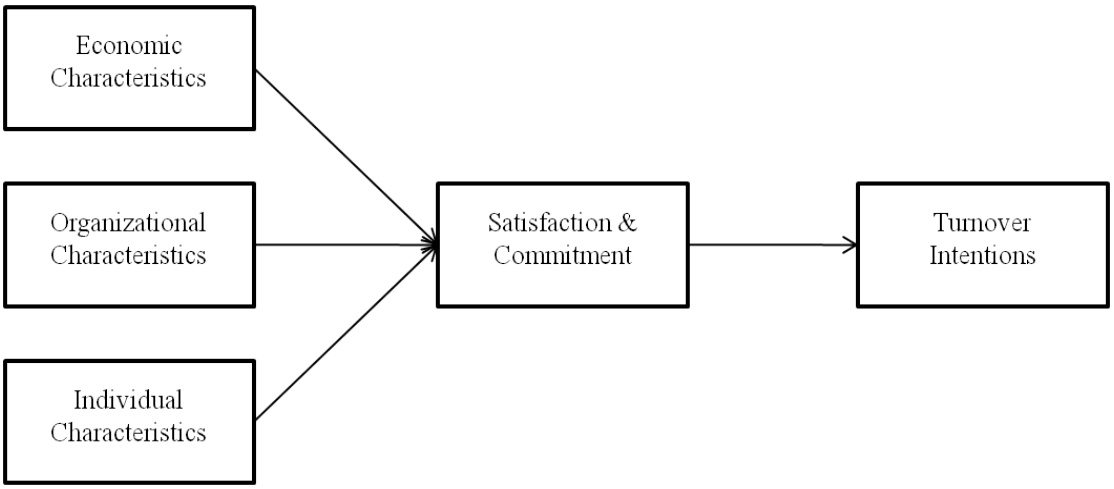

Figure 1: Simplified Model of Employee Turnover (Riddel, 2010)

Riddel's (2010) simplified model of employee turnover was mainly tested using a correlation matrix, and the model combined variables that should have been separated for evaluation (e.g., job satisfaction and organizational commitment). The need to expand, analyze, and validate Riddel's (2010) model of employee turnover is necessary to ensure that the model is usable and useful. To expand Riddel's (2010) model of turnover intentions, the first step is to separate the mediating variables of job satisfaction and organizational commitment and show them as independent latent variables. The next step is to expand the independent variables that Riddel (2010) proposed. There were actually five independent variables tested in Riddel's (2010) study, not three as stated in his simplified model. The independent latent variables are availability of alternatives, interrole conflict, perceived organizational support, operations tempo, and life domain. The expanded model thus tested in this research is shown in Figure 2.

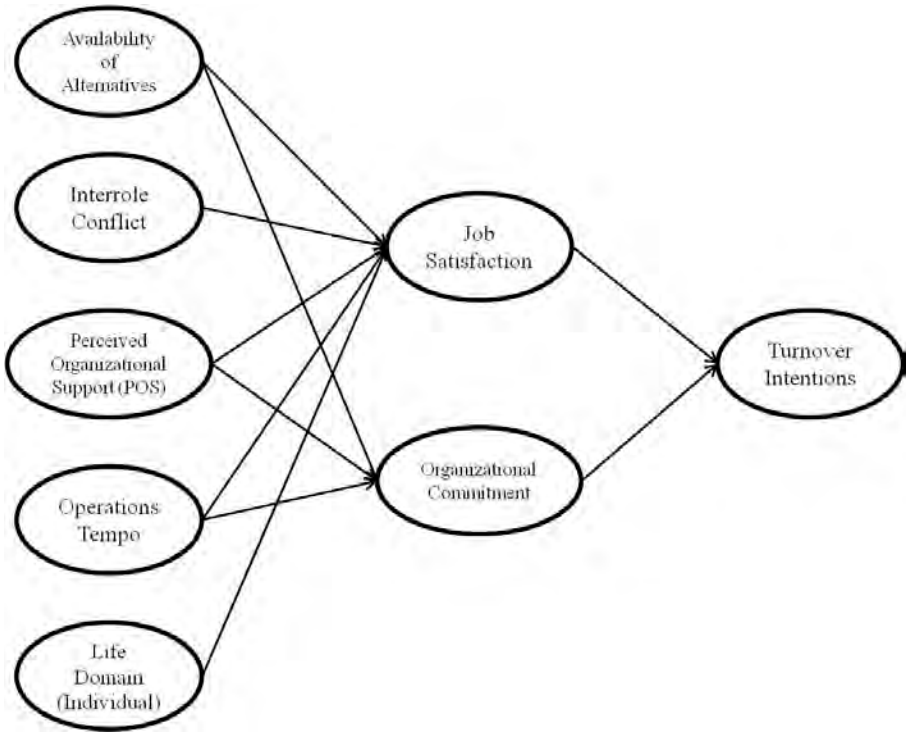

Figure 2: Expanded Model of Employee Turnover

Perceptions of Turnover Intentions

Perceptions of turnover intentions between independent groups within any population are essential to understanding how groups will react to influences in the work place. In Cotton and Tuttles' (1986) meta-analysis of employee turnover, they studied 26 variables related to turnover which included gender, age, marital status, and education to name a few. These personal correlates are important to collect and understand for a leader or manager in an organization.

The perception differences of turnover intentions between males and females have been studied throughout the years. Gender has been inconclusive in the understanding of

turnover intentions (Weisberg & Kirschenbaum, 1993). Although males and females do demonstrate some differences in turnover, these differences are not always significant. Strong confidence was found that gender was a correlate of turnover in a meta-analysis (Cotton & Tuttle, 1986). However, in another study, gender was found to have no significant difference on turnover intentions (Weisberg & Kirschenbaum, 1993). Lewis (1992) also showed no gender differences with respect to turnover after several factors were controlled. Based on the research, the following hypothesis test was developed to test the CE CGO sample.

$H1_0$: *Males and females do not differ on perceptions of turnover intentions.*

$H1_a$: *Males and females differ on perceptions of turnover intentions.*

The perception differences of turnover intentions between CE CGOs with varying deployment experience have shown varying results in the literature. One explanation of the different results is that operations tempo (OPTEMPO) and turnover intentions might have a curvilinear relationship (Castro & Adler, 1999). This curvilinear relationship could change the perceptions of turnover intentions based on either the lack of deployments or an excessive number of deployments. This is supported by Huffman et al. (2005) when they suggest that during very low and very high levels of deployment, turnover intentions are high; in contrast, when deployments are at moderate levels, turnover intentions are low. Huffman et al. (2005) found no curvilinear relationship with turnover intentions when deployments were considered. When the curvilinear relationship was studied, the average number of deployments for the respondents was 1.05 (SD = 1.73) (Huffman et al., 2005). Based on the research, there is no evidence to

suggest that the number of deployments would lower the service members' intentions to leave. For this reason, the following wide range of hypotheses were developed to test the CE CGO sample. Hypotheses two and three were designed to investigate any differences in perception between CGOs with few deployments and CGOs with more deployment experience, respectively. Hypothesis tests four through six were designed to investigate a potential curvilinear relationship between turnover intentions and the number of deployments.

$H2_0$: *CE Officers who have never deployed and CE Officers who have deployed do not differ on perceptions of turnover intentions.*

$H2_a$: *CE Officers who have never deployed and CE Officers who have deployed differ on perceptions of turnover intentions.*

$H3_0$: *CE Officers who have deployed less than three times and CE Officers who have deployed three or more times do not differ on perceptions of turnover intentions.*

$H3_a$: *CE Officers who have deployed less than three times and CE Officers who have deployed three or more times differ on perceptions of turnover intentions.*

$H4_0$: *CE Officers who have deployed less than or more than one time and CE Officers who have deployed one time do not differ on perceptions of turnover intentions.*

$H4_a$: *CE Officers who have deployed less than or more than one time and CE Officers who have deployed one time differ on perceptions of turnover intentions.*

$H5_0$: *CE Officers who have deployed less than or more than two times and CE Officers who have deployed two times do not differ on perceptions of turnover intentions.*

$H5_a$: *CE Officers who have deployed less than or more than two times and CE Officers who have deployed two times differ on perceptions of turnover intentions.*

$H6_0$: *CE Officers who have deployed less than or more than three times and CE Officers who have deployed three times do not differ on perceptions of turnover intentions.*

$H6_a$: *CE Officers who have deployed less than or more than three times and CE Officers who have deployed three times differ on perceptions of turnover intentions.*

The perception differences of turnover intentions between single and married employees have been studied and found to be a reliable indicator with regards to understanding turnover intentions. Cotton and Tuttle (1986) found, with moderate confidence, that marital status correlated with turnover. Chen (2006) also found that marital status was a major factor affecting turnover intentions. Married employees could experience more interrole conflict than their single employee counterparts. The work-family and family-work conflicts are more pronounced for married employees. Based on the research, the following hypothesis test was developed.

$H7_0$: *CE Officers who are single and CE Officers who are married do not differ on perceptions of turnover intentions.*

$H7_a$: *CE Officers who are single and CE Officers who are married differ on perceptions of turnover intentions.*

The perception differences of turnover intentions between employees of different ages have been studied (Seybolt, 1983; Cotton & Tuttle, 1986; Werbel & Bedeian, 1989). The CE CGO ranks include a wide range in ages. A majority of the officers are in their 20s to early 30s with some as old as late 30s and even 40s. For this study, the age will be divided into those CGOs under 30 and those 30 and over. This division was selected based on the career responsibility level the Air Force places on more senior Captains that will soon be Majors (promotion to Major for most officers occurs in their early 30s). Research supports that as age changes, an employee's needs change (Seybolt, 1983).

Age has also been found with strong confidence ($p < 0.0005$) to be negatively related to turnover (Cotton & Tuttle, 1986). Werbel and Bedeian (1989) found that younger employees had the same intentions to quit regardless of their performance, but older employees had lower intentions to quit if their performance was higher. Studying a potential difference with regards to these more mature and possibly more experienced officers is of interest when trying to understand if these officers view intent to quit differently. Based on the research, the following hypothesis test was developed.

$H8_0$: *CE Officers who are below the age of 30 and CE Officers who are 30 years old or older do not differ on perceptions of turnover intentions.*

$H8_a$: *CE Officers who are below the age of 30 and CE Officers who are 30 years old or older differ on perceptions of turnover intentions.*

The perception differences of turnover intentions between employees with professional licensures and employees without these licensures have been studied in the area of education (Cotton & Tuttle, 1986; Bright, 2008). Higher levels of education provide the employee with additional opportunities for alternative employment. This is supported by research that showed employee's with higher levels of education were significantly more likely ($b = 0.175$, $p = 0.007$) to leave their jobs compared to employee's with lower education levels (Bright, 2008). Education is not the same thing as a professional engineer (PE) licensure, but for the purposes of this research the hypothesis was developed based on the education research. The PE does provide the CE CGO with additional credentials to obtain other engineering employment outside the Air Force. Education has been shown with strong confidence ($p < 0.0005$) as a correlate to

turnover (Cotton & Tuttle, 1986). Based on the research, the following hypothesis test was developed.

$H9_0$: *CE Officers who have their PE and CE Officers who do not have their PE do not differ on perceptions of turnover intentions.*

$H9_a$: *CE Officers who have their PE and CE Officers who do not have their PE differ on perceptions of turnover intentions.*

Job Satisfaction

As the discussion begins on job satisfaction, the hypotheses developed for the remainder of this chapter addresses the next phase of the research (path modeling), which is independent of the prior null hypothesis tests. To start the discussion on job satisfaction, it is important to understand what job satisfaction means. Job satisfaction was defined by Locke (1976) as, "…a pleasurable or positive emotional state resulting from the appraisal of one's job or job experiences." More recently, job satisfaction was viewed as representing how satisfied an employee is with their job (Colquitt et al., 2011). The effect of high or low satisfaction with respect to a job can influence and predict turnover intentions. Griffeth et al. (2000) state that "various job attitudes modestly predicted turnover, with overall job satisfaction being the best predictor ($r = -0.19$, $p < 0.05$)." This is supported by Chen et al. (2011) who found higher negative correlations (r-values from -0.25 to -0.72, $p < 0.05$) in their study of job satisfaction and turnover intentions. However, it is not job satisfaction alone that predicts turnover intentions. The conditions and characteristics of an employee's job at a given time drive changes in job satisfaction that provide the prediction of turnover. Job satisfaction was determined to be significant as a mediating variable (Price & Mueller, 1981). This finding is supported by research indicating that job satisfaction indirectly affects turnover through commitment

(Porter et al., 1974; Mobley, 1977; Steers, 1977; Mobley et al., 1979; Williams & Hazer, 1986; Elangovan, 2001).

Mobley's (1982) theory of turnover suggests that job satisfaction changes when an employee reevaluates the current job based on its conditions and characteristics. The change in job satisfaction can be influenced by a shock experienced by the employee at work based on the unfolding model of turnover (Lee et al., 1996, 1999). This shock experienced by the employee at work can be a close friend being fired, or as in the case of CE CGOs, the loss of a friend or subordinate who is killed or wounded in action in Iraq or Afghanistan. This research leads to the conclusion that it is not the individual's initial perception of job satisfaction but the change in job satisfaction that leads to the prediction of turnover intentions. Beyond an individual's view of job satisfaction, the systematic change that occurs over time in job satisfaction can also drive changes in turnover intentions (Chen et al., 2011); even if job satisfaction is at relatively high levels, turnover intentions can still remain high (Sousa-Poza & Henneberger, 2004). Overall, job satisfaction has been shown to be strong predictor of turnover intentions (negatively related) and should be used in the model. Based on past research, is posited that the independent variables of economic characteristics, organizational characteristics, and individual characteristics will influence the employee's job satisfaction in order to determine turnover intentions. These independent variables will be discussed later in this chapter. Based on the literature, the following hypothesis was adopted.

H1: Job Satisfaction will be negatively related to turnover intentions.

Organizational Commitment

Organizational commitment is a psychological state that portrays the employee's relationship with the organization and has implications for the decision to stay or leave an organization (Meyer & Allen, 1991). Organizational commitment is a stronger predictor of turnover than overall job satisfaction (Griffeth et al., 2000). In a meta-analysis of organizational commitment and how it relates to turnover intentions, a negative relation ($r = -0.47$) was found (Mathieu & Zajac, 1990). Elangovan (2001) also showed a strong negative effect ($r = -0.756$) of organizational commitment on turnover intentions. These results are supported as the literature shows a consistent negative correlation between organizational commitment and turnover intentions (Porter et al., 1974; Porter et al., 1976; Mathieu & Zajac, 1990; Elangovan, 2001).

Organizational commitment has three components: affective, normative, and continuance commitment (Gade et al., 2003; Jaros, 1997; Meyer & Allen, 1991). Affective commitment antecedents fall into three categories: personal (individual) characteristics, structural (organizational) characteristics, and work experience (Meyer & Allen, 1991). These antecedents allow commitment to develop based on experiences that satisfy or are compatible with the employee's values (Meyer & Allen, 1991). Jaros (1997) found evidence that affective commitment had a significantly stronger correlation with turnover intentions when compared to normative and continuance commitment.

Continuance commitment antecedents that are most frequently studied are investments (side bets) and the availability of alternatives (Meyer & Allen, 1991). The availability of alternatives is plentiful for professional CE CGOs who possess a highly sought after science and technology degree, as well as training from the Air Force as a

project manager. The Air Force also offers many officer and enlisted career fields monetary bonus incentives and rewards that may drive an enhanced normative commitment.

In the case of CE CGOs, the Air Force does not offer these incentives and, therefore, the officers may not exhibit the higher levels of normative commitment. Factors such as increased pay and bonuses have shown little relevance with respect to turnover intentions in the literature. Cotton and Tuttle (1986) found significant negative correlations between turnover intentions and satisfaction with pay. Cotton and Tuttle (1986) stated that, "organizations typically use pay as a major inducement to reduce turnover among blue-collar and nonmanagerial employees; yet the findings of this review suggest that pay may actually be less important for these workers than for other employees." These other employees that Cotton and Tuttle (1986) are referring to include professionals, or white-collar workers (e.g., CE CGOs). The lack of some incentive pay may be influencing some members of the CE CGO career field to look for other alternatives. Incentive pay or bonuses, as an influence, are tools that can be useful to retain employees in an organization. Normative commitment may also develop when an organization provides the employee with paid college tuition or provides job training at the organization's expense (Meyer & Allen, 1991). It would be a mistake to consider only one of the components of organizational commitment. Meyer and Allen (1991) put it best when they said, "If reduction of turnover is the only concern…one form of commitment may be as good as another. This focus on turnover, however, may be shortsighted." A stable workforce is not all an organization wants; the organization still needs employees who are committed to the organization. Meyer and Allen's (1991)

research was supported by Meyer et al. (2002), whose meta-analysis demonstrated a negative correlation between all three of the antecedents of organizational commitment and turnover intentions. Based on the literature, the following hypothesis was developed.

H2: Organizational commitment will be negatively related to turnover intentions.

Job Availability Characteristics

In Riddel's (2010) simplified model of turnover, economic characteristics are evaluated using items that measure availability of alternatives. After review of the past research (Cotton & Tuttle, 1986; Gross, 1998; Useem, 1999; Griffeth et al., 2000), it may be more appropriate to consider availability of alternatives as representative of job availability characteristics. Simply put, alternative job employment does not always equate to a better economic situation.

The availability of alternatives outside the military may also provide a possible influence on many CE CGOs to voluntarily leave the military. Perceived job alternatives are positively related to turnover intentions, while the unemployment rate is negatively related to turnover intentions with moderate confidence (Cotton & Tuttle, 1986). The availability of alternative employment has given the CE CGOs and their families a choice of employment that is potentially safer for the service member and offers more benefits for the family. Griffeth et al. (2000) found that perceived alternatives modestly predict turnover ($r = 0.12$, $p < 0.05$). The relative ease with which a CE CGO can search for alternative options makes the perceived alternatives easier to find, and hence influences an employee's intentions to leave. This is supported by Gross (1998) and Useem (1999), who theorized that the growing popularity of the Internet for job hunting will make it

easier for prospective leavers to find alternate employment. Based on the literature, the following hypotheses are adopted.

H3: Availability of alternatives will be negatively related to job satisfaction.

H4: Availability of alternatives will be negatively related to organizational commitment.

Organizational Characteristics

The job availability characteristic does not influence job satisfaction and organizational commitment alone. Another variable that provides insight into turnover intentions through satisfaction and commitment is organizational characteristics. The first organizational characteristic that will be discussed is OPTEMPO. OPTEMPO is one of the most common explanations as to why military members choose to leave the service (Huffman et al., 2005). In their study, Huffman et al. (2005) found that OPTEMPO was a concern for many junior enlisted, noncommissioned officers (NCOs), and junior officers, especially when deployments were regarded as too long and too frequent (leading to increased workload). CE CGOs are encountering similar circumstances of increased pre-deployment training, long deployments, and a six-month deployed, one-month training, and five-month home deployment cycle. Additionally, OPTEMPO and turnover intentions might have a curvilinear relationship (Castro & Adler, 1999). The curvilinear relationship means when OPTEMPO is at very low and very high levels, turnover intentions are high; in contrast, when OPTEMPO is at moderate levels, turnover intentions are low (Huffman et al., 2005). Riddel (2010) found a positive relation between OPTEMPO and job satisfaction ($r = 0.45$, $p < 0.01$) and between OPTEMPO and organizational commitment ($r = 0.22$, $p < 0.01$). Table 1 shows the stressed status of

CE officers as reported by Air Force Personnel Command (2011). Much of the past research performed with military members has relied on data collected in the mid to late 1990s (e.g., Wisecarver et al., 2006; Hosek, 2004; Reed & Segal, 2000; Hosek & Totten, 1998) and are not an accurate representation of the operational environment the military is currently facing.

Table 1: Stressed Air Force Career Field (AFPC, 2011)

Stressed AFSs				Data as of 31 Mar 11	
Officer		Enlisted		Total	
AFSs	Personnel	AFSs	Personnel	AFSs	Personnel
6	6,103 / 64,736 (9.4 %)	16	48,785/ 241,556 (20.2%)	22	54,888/ 306,292 (17.9 %)

* Classified deployments don't appear in database
** 1W0 (Weather) included to account for Spec Ops Weather, 1W0X2

AFS	Title	Ops Demand	Required vs. Funded Manpower	Personnel Inventory / Retention
	ENLISTED AFSs			
1A8	Airborne Crypto Lang/ISR Opr	✓		✓
1C2	Combat Control	✓*	✓	
1C3	Command Post		✓	✓
1C4	Tactical Air Control Party	✓		✓
1N0	Operations Intel	✓	✓	✓
1N1	Geospatial Intel	✓		✓
1N4	Network Intel	✓		✓
1T2	Pararescue	✓*		✓
1W0**	Special Ops Weather	✓*		✓
3E2	Pavement/Construction Equip	✓	✓	
3E3	Structural	✓	✓	
3E4	Utilities Systems	✓	✓	
3E5	Engineering	✓	✓	
3E8	Explosive Ordnance Disposal	✓	✓	✓
3P0	Security Forces	✓	✓	
6C0	Contracting	✓	✓	
	OFFICER AFSs			
13D	Control & Recovery	✓*		✓
13M	Airfield Ops	✓	✓	
14N	Intelligence	✓	✓	
32E	Civil Engineer	✓	✓	
35P	Public Affairs	✓	✓	
64P	Contracting	✓	✓	

Another aspect of organizational characteristics is the concept of Perceived Organizational Support (POS). The way in which employees perceive that the

organization supports them and cares about their well-being is important when talking about turnover intentions. Research has found that POS reduces turnover intentions (Blomme et al., 2010; Dawley et al., 2010). POS was also found to increase personal sacrifice, which provides a stronger connection between the employee and the organization (Dawley et al., 2010). POS is an important factor when trying to retain highly trained and experienced employees. Research shows that POS holds an important relationship with turnover intentions, and that employees who experience higher levels of POS are less likely to voluntarily separate (Lazarova & Caligiuri, 2001). Foong-ming (2008) found a negative relationship ($b = -0.33$, $p < 0.001$) between POS and turnover intentions, with the main drivers being career development opportunities, supervisory support, and internal promotion.

The interrole conflict between the CE CGOs' work and their families also may contribute as a stressor that could indirectly influence officers to stay in the service or leave at the end of their commitment. Interrole conflict may lead to poor work-family balance, potentially causing work-family conflict (Stoeva et al., 2002; Bellavia & Frone, 2005). Work-family conflict is a form of interrole conflict in which the role pressures from the work and family domains are mutually incompatible (Bellavia & Frone, 2005). Work-family conflict is the concept that family can interfere with work and that work can interfere with family, and responsibilities on one side or the other are not met (Blomme et al., 2010; Frone et al., 1997). Blomme et al. (2010) supported past research in the area of work-family conflict when their data showed that employees who reported more work-family conflict also reported a lower job satisfaction. Based on the literature, the following hypotheses are adopted.

H5: Interrole conflict will be negatively related to job satisfaction.

H6: Perceived organizational support will be positively related to job satisfaction.

H7: Perceived organizational support will be positively related to organizational commitment.

H8: Operations tempo will be positively related to job satisfaction.

H9: Operations tempo will be positively related to organizational commitment.

Individual Characteristics

Mitchell et al. (2001) stated a belief that a key factor in understanding why people stay or leave their job is a construct called job embeddedness. Job embeddedness is basically how the employee fits in their overall environment (not just their organization). Job embeddedness has six dimensions: links, fit, and sacrifice each associated with both the individual's organization and community (Mitchell et al., 2001). Links are described as formal or informal connections between an individual and an organization or other people, and the greater number of links that an individual has, the lower the probability of voluntary turnover (Mitchell et al., 2001). The links for CE CGOs could be other people in the squadron, friends in their career field, or an attachment to the squadron they are serving in or the Air Force. Fit is an employee's perceived compatibility or comfort with an organization and with the employee's environment (Mitchell et al., 2001). The fit for CE CGOs typically comes from their perception of military life. Military life can be demanding, and some CE CGOs intend to stay for one or two assignments based on how they fit with the military service. Sacrifice is those perceived costs of material or psychological benefits that may be lost by voluntarily leaving a job (Mitchell et al.,

2001). The sacrifice for CE CGOs can include many military benefits beyond money that would be lost if they separate from the Air Force. These benefits include but are not limited to: medical benefits, shopping privileges at the Army and Air Force Exchange Service (AAFES), shopping privileges at the commissary (military grocery store), and free access to gym facilities.

Mitchell et al. (2001) found evidence that supported each of the six dimensions of job embeddedness as having a significant relation to turnover in at least a portion of their study; they also found that job embeddedness increases the prediction of turnover attributed to job satisfaction and organizational commitment. Dawley et al. (2010) found an increase in personal sacrifice further connects employees to the organization, and that job fit can increase the perception of overall support from the organization. For these reasons, job embeddedness is considered an important factor for this study and was found to be significant in the study conducted by Riddel (2010). Job embeddedness was measured using the construct of life domain for this study. Life domain is the operational measure that accounts for the employees links, fit, and sacrifice with their organization and community. Riddel (2010) reported a positive correlation between life domain and job satisfaction ($r = 0.39$, $p < 0.01$), but found non-significant results between life domain and organizational commitment within the CE career field ($r = 0.10$, ns). Based on the literature, the following hypothesis was adopted.

H10: Life domain will be positively related to job satisfaction.

Figure 3 shows a diagram of the model with the associated hypotheses. These hypotheses were tested using Structural Equation Modeling (SEM), which is discussed in future chapters.

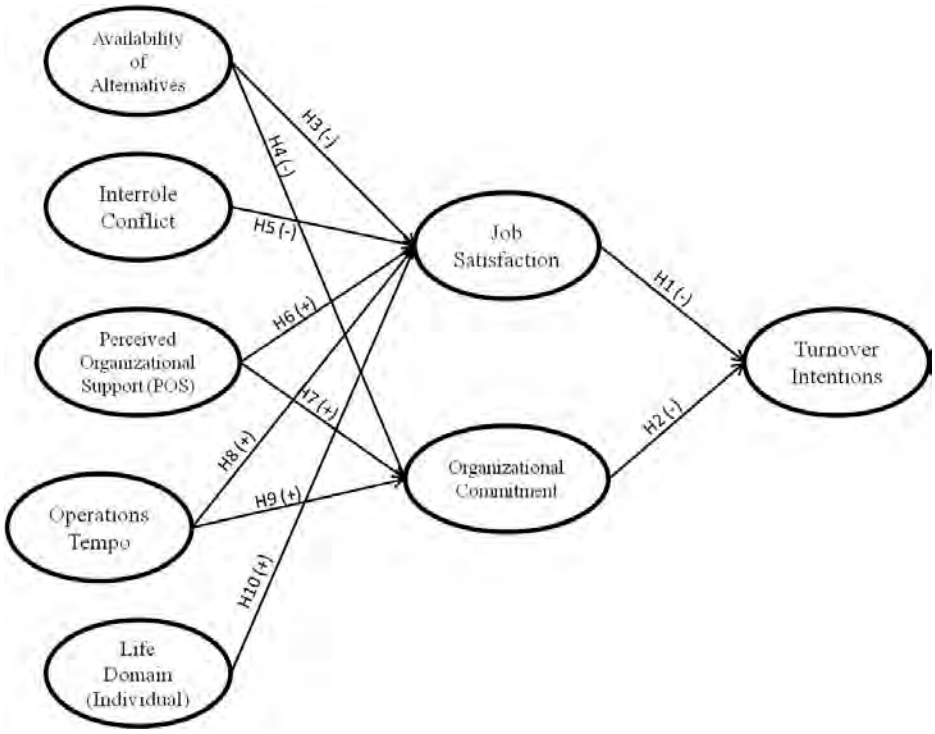

Figure 3: Turnover Intentions Model with Hypotheses

Summary

This chapter examined the relevant literature related to turnover intentions and built a model of turnover intention. As evident from the relevant literature, turnover intention is not easy to measure as it has many variables that can possibly help predict an employee's intention to voluntarily leave an organization. The factors of job satisfaction, availability of alternatives, interrole conflict, perceived organizational support, organizational commitment, life domain, operations tempo, and turnover intentions were thus the basis for this reexamination of the turnover intentions for CE CGOs. The next chapter will present the methodologies that were used to collect the original data (Riddel,

2010); it will also discuss the methodologies utilized to analyze the data for perception differences and to validate a causal model of turnover intentions.

III. Methodology

The methodology for this study used secondary data from a voluntary self-reported survey instrument; the resulting data was analyzed using independent t-testing and Structural Equation Modeling (SEM). The survey was administered to the entire civil engineering company grade officer population in the United States Air Force. A more detailed description of the participants is provided in the following sections. Important definitions are also provided for some of the military factors measured with the survey. The procedures for this methodology are then addressed, followed by a discussion of the measures in the survey. The final section in this chapter discusses the two main analysis methods that were used to analyze the data.

Population

The original data was collected by Riddel (2010) with a survey instrument (found in Appendix A) e-mailed directly to 729 officers. All of the officers invited to participate in the research were current Air Force civil engineering company grade officers, who were in the ranks of second lieutenant, first lieutenant, and captain. These officers are junior to mid-level mangers within the civil engineering organization and hold responsibilities ranging from design, construction, and maintenance of facilities and infrastructure to leadership and management of emergency planners and responders at Air Force installations.

As reported by Riddel (2010), there were 42 undeliverable e-mails; this immediately reduced the number of potential respondents to 687. Of the 687 survey

recipients, 364 completed the survey for a 53% response rate. The sample included 317 males (87.1%), 43 females (11.8%), and four participants who failed to provide their gender. The average age of the participants was 27.66 years (SD = 4.12), and the average tenure was 4.7 years (SD = 3.4). Finally, 56.3% were married (N = 205) and 40.9% were single (N = 149), with ten participants not responding to the question. All of the population and sample data was obtained from the original research study (Riddel, 2010).

Voluntary Turnover

This research addressed turnover intentions of civil engineering officers who have the option to voluntarily leave the Air Force. In the Air Force, voluntary turnover is only possible when the officer has fulfilled all service commitments and is in good standing with the Air Force. The first part of this statement dealing with fulfillment of commitments addresses contractual obligations resulting from any monetary investment or promotion in rank where the Air Force is directly involved. The second part dealing with good standing refers to the Air Force not pursuing involuntary turnover due to any conduct that is considered unbecoming of an officer.

Operations Tempo

Operations Tempo (OPTEMPO) as defined by Riddel (2010) collected data on deployments, temporary duty assignments (TDYs), and training exercises. Deployments cover all deployment orders received by an officer even if the officer did not leave the Continental United States (CONUS). TDYs are all other orders that direct the officer to temporarily leave their home station (station of permanent assignment) to complete a non-deployment mission. Training exercises for the purpose of this study deals with

training conducted somewhere other than the officer's home station. This is a very broad definition of OPTEMPO that takes into account many different missions that take civil engineering officers away from their home station.

Procedure

The procedure for collecting the survey data is detailed in Riddel's (2010) initial study of Air Force civil engineering company grade officers. The following procedural information is provided for the reader's general knowledge. Participants were invited through an e-mail that was sent directly to their military e-mail accounts. An e-mail pre-survey notification letter preceded the survey by a few days, which is consistent with research finding that an advance notification increases questionnaire response rates (Medlin et al., 1999; Solomon, 2001). This e-mail letter was sent from the office of the Air Force Civil Engineer (HQ USAF/A7C); it was followed by two e-mail reminders sent out one week apart. All survey data was collected in the January and February timeframe of 2010.

Measures

The measure discussion is based on the survey instrument developed by Riddel (2010) for his research. The questionnaire included 118 items that measured: turnover intentions, job satisfaction, organizational commitment, availability of alternatives, perceived organizational support, operations tempo, interrole conflict, and life domain. Demographics were also collected from the participants; in the current research, this is important for the determination of perceptions about turnover intentions between several different groups. The survey instrument also collected open-ended responses (qualitative

data), but this data was not used for the current research. All quantitative response data were measured using a 7-point Likert-type response scale (1 = strongly disagree, 2 = disagree, 3 = slightly disagree, 4 = neither agree nor disagree, 5 = slightly agree, 6 = agree, 7 = strongly agree) to assess how civil engineer company grade officers felt about different aspects of their job. Table 2 provides a detailed key to the survey and shows each measure's reliability in comparison to the measure's source. The sample size (N) for each measure varies based on the number of respondents who answered all the questions for the particular measure.

Table 2: Survey Key and Reliability

Measure	Question Numbers	Source of Measure	Reported Reliability	Calculated Reliability
Turnover Intentions	Items Located in Part 4, Career Opportunities and Intentions 18 – 24	Riddel, 2010 (ad hoc measure)	$\alpha = 0.90$	$\alpha = 0.90$ (N = 357)
Job Satisfaction	Items Located in Part 1, Job Attitudes	Spector, 1997		$\alpha = 0.90$ (N = 239)
Pay	1, 4*, 7*, & 10		$\alpha = 0.75$	$\alpha = 0.82$ (N = 361)
Promotion	2*, 5, 8, & 11		$\alpha = 0.73$	$\alpha = 0.68$ (N = 363)
Operating Conditions	3*, 6, 9*, & 12*		$\alpha = 0.62$	$\alpha = 0.63$ (N = 361)
Nature of Work	1*, 2, 3, & 4 in Subsection, End of Part 1		$\alpha = 0.78$	$\alpha = 0.87$ (N = 242)
Organizational Commitment	Items Located in Part 2, General Attitudes Toward CE/Air Force	Meyer et al., 1993 Meyer et al., 1997		$\alpha = 0.88$ AF(N = 347) CE(N = 353)
Affective	1, 4, 7, 10*, 13*, 16*, 19, & 21*		$\alpha = 0.82$ (organization) $\alpha = 0.82$ (occupation)	$\alpha = 0.79$ AF(N = 357) $\alpha = 0.82$ CE(N = 355)
Normative	2*, 5, 8, 11, 14, & 17		$\alpha = 0.83$ (organization) $\alpha = 0.80$ (occupation)	$\alpha = 0.81$ AF(N = 357) $\alpha = 0.84$ CE(N = 358)
Continuance	3*, 6, 9, 12*, 15, 18, 20, 22, & 23		$\alpha = 0.83$ (organization) $\alpha = 0.80$ (occupation)	$\alpha = 0.82$ AF(N = 351) $\alpha = 0.79$ CE(N = 358)

* Denotes Reverse Coded Questions

Table 2 Cont.: Survey Key and Reliability

Measure	Question Numbers	Source of Measure	Reported Reliability	Calculated Reliability
Availability of Alternatives	Items Located in Part 4, Career Opportunities and Intentions	Griffeth et al., 2005		$\alpha = 0.81$ (N = 356)
Ease of Movement	1, 2, 3*, 4, & 5		3 samples $\alpha = 0.90/0.76/0.70$	$\alpha = 0.90$ (N = 361)
Desirability of Movement	6 – 8		3 samples $\alpha = 0.78/0.84/0.85$	$\alpha = 0.91$ (N = 361)
Networking	9 – 11		3 samples $\alpha = 0.63/0.75/0.76$	$\alpha = 0.87$ (N = 360)
Crystallization of Alternatives	12 – 13		3 samples $\alpha = 0.59/0.77/0.82$	$\alpha = 0.71$ (N = 359)
Mobility	14 – 15		3 samples $\alpha = 0.67/0.66/0.73$	$\alpha = 0.61$ (N = 357)
Perceived Organizational Support	Items Located in Part 2, General Attitudes Toward CE/Air Force 24, 25*, 26, 27, 28*, 29, 30*, 31, & 32	Eisenberger et al., 1986 Eisenberger et al., 1990 Wayne et al., 1997	$\alpha = 0.97$	$\alpha = 0.90$ AF(N = 353) $\alpha = 0.92$ CE(N = 355)
Operations Tempo	Items Located in Part 3, Operations Tempo 7 – 14	Riddel, 2010 (ad hoc measure)	$\alpha = 0.77$	$\alpha = 0.77$ (N = 340)
Interrole Conflict	Items Located in Part 1, Job Attitudes	Netemeyer et al., 1996		$\alpha = 0.89$ (N = 359)
Work-Family Conflict	14, 16, 18, 20, & 22		$\alpha = 0.88$	$\alpha = 0.92$ (N = 361)
Family-Work Conflict	15, 17, 19, 21, & 23		$\alpha = 0.88$	$\alpha = 0.89$ (N = 359)
Life Domain	Items Located in Part 5, Demographics 1 – 8	Riddel, 2010 (ad hoc measure)	$\alpha = 0.76$	$\alpha = 0.76$ (N = 352)

* Denotes Reverse Coded Questions

Analysis Methods

Independent Sample t-tests.

These t-tests are also known as unpaired t-tests. They are used when comparing interval or ratio data from two independent populations. The results from these t-tests determine whether the data from the two populations indicate a difference in the perceptions of a given variable. For the purposes of this research, the t-tests were used to

compare two independent populations and their perceptions about turnover intentions. This method was used to answer the null hypothesis tests defined in Chapter II. The t-tests used the two-tailed test of significance, which is more demanding than the standard one-tailed test of significance.

Structural Equation Modeling.

Structural Equation Modeling (SEM) using a latent variable model can be used to conduct path analysis to show causal inferences (Kline, 2010). In order to better understand SEM, this section defines some terms that will be used in future chapters to report and discuss the path model developed. Latent variables are not observed directly (e.g., job satisfaction, turnover intentions). For this research, SEM was used to model the causal inferences that determine turnover intentions. The model used three types of variables to describe the relationships to turnover intentions as shown in Figure 4. Exogenous variables are independent variables that are influenced by variables outside of the causal model. Endogenous variables are dependent variables that can be causally affected by other variables in the model. Finally, there are mediator variables that convey the effect between the exogenous and endogenous variables.

SEM presents the results of the analysis in direct and total effects along the path of the model (as represented in Figure 4 by the arrows). The model must also demonstrate a good fit for the results to be valid, and the fit is determined by factorial validity. The validity of the overall model is determined by examining the convergent, discriminant, and construct validity (Gefen & Straub, 2005). Convergent validity is demonstrated by a statistically significant p-value ($p \leq 0.05$) for each measurement item as it loads to its latent variable (Gefen & Straub, 2005). Discriminant validity is

demonstrated by showing two things: “the correlation of the latent variable scores with the measurement items needs to show an appropriate pattern of loadings, one in which the measurement items load highly on their theoretically assigned factor and not highly on other factors,” and by testing the square root of every Average Variance Extracted (AVE) to ensure the AVE for a given variable is larger than the correlations between the latent variables (Gefen & Straub, 2005). Finally, construct validity is indicated by the quality of the R-squared value (Rijlaarsdam, 2007) for the endogenous and mediator variables.

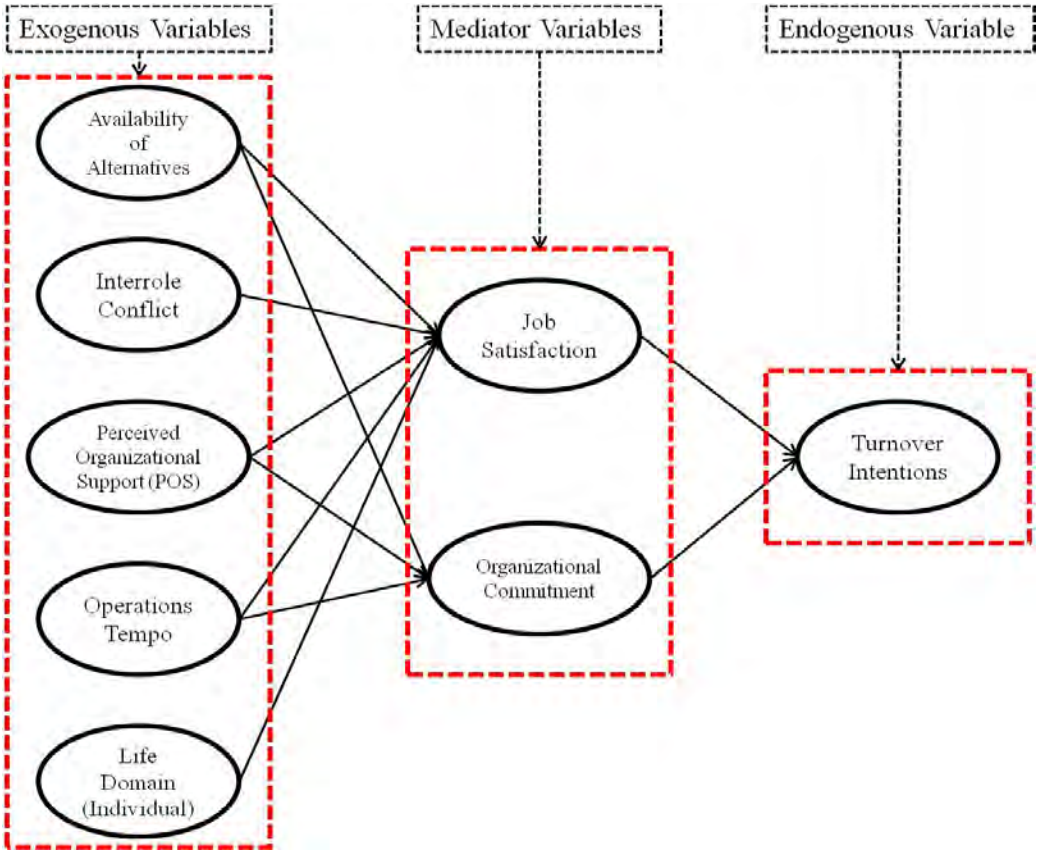

Figure 4: Variable Identification Turnover Intention Model

This research used partial least squares and bootstrapping during the SEM analysis. Partial least squares produce SEM results by accomplishing both factor analysis and multiple regression in order to maximize the predictive relationship between the latent variables (Bovaird et al., 2007). The process of bootstrapping produces results in a larger sample (larger than available observations), and these results are claimed to model the population (Henderson, 2005). The sample size of 364 was increased to 5000 using bootstrapping. Utilizing 5000 resample's with the bootstrap method is consistent with the literature (Preacher & Hayes, 2008; Riddel, 2010; Carraca et al., 2011). The bootstrapping method used a random sample of 200 cases from the data to generate the sample size of 5000. Effective bootstrapping results are conditional on the samples responses and how well they represent the target population (Bovaird et al., 2007).

Summary

This chapter discussed the participants surveyed by Riddel (2010) during his initial turnover intention study. Definitions for Air Force voluntary turnover and Air Force operations tempo were also provided as they relate to the survey instrument used for the 2010 study. Riddels' (2010) survey procedures and measures were covered to provide an in-depth key for future utilization of this instrument. Finally, the methods used to analyze the data were discussed. Details were provided for the indices that were used when reporting results. In the next chapter, the results from the analysis are discussed.

IV. Analysis and Results

This chapter discusses the analysis and results found by executing the methodology explained in the previous chapter. The analysis was conducted using the Statistical Package for the Social Sciences (SPSS®) and SmartPLS (Ringle et al., 2005) software. This chapter first discusses the two independent analysis procedures conducted with the data: independent t-testing and Structural Equation Modeling (SEM). Then the use of factor analysis and a review of the survey instrument questions are addressed to explain the selection of questions for SEM. Finally, the results are provided and discussed in the context of the investigative questions and hypotheses from Chapter II.

Analysis

SPSS® was used for the initial analysis and independent t-testing, and SmartPLS (Ringle et al., 2005) was used to construct and evaluate the turnover intention model using SEM. The analysis discussion is divided into two sections due to the differences in the independent t-testing and SEM analysis.

Independent t-testing.

The data from Riddels' (2010) original survey instrument were reviewed for frequency issues and reverse coded questions. The items that comprised the turnover intention measure were then averaged into a turnover intention variable. In order to compare similar sample sizes, all tested groups were reviewed for frequency of occurrence (e.g., how many males and females responded). The sample sizes for the two

independent groups were then equalized (N-values for each group made equal to each other) with the random sampling function in SPSS®.

Using the independent-samples t-test function in SPSS®, the data was analyzed using nine different independent population groupings: male versus female, officers who have never deployed versus officers who have deployed, officers who have deployed less than three times versus officers who have deployed three or more times, officers who have $< 1\ or\ > 1$ deployments versus officers with one deployment, officers who have $< 2\ or\ > 2$ deployments versus officers with two deployments, officers who have $< 3\ or\ > 3$ deployments versus officers with three deployments, single versus married, age below 30 versus ages 30 and over, and officer with their Professional Engineering (PE) licensure versus officer without their PE. The results from the analysis are discussed later in this chapter.

Structural Equation Modeling.

After the original data from Riddels' (2010) survey instrument was cleaned and validated, a theoretical model was built in SmartPLS (Ringle et al., 2005). The model followed the results of Riddels' (2010) correlation matrix and mediating effects based on the data collected, participants, and sample size (N = 365). After the model was built, an initial calculation of estimates was conducted. The initial model, with all of the survey items included for each measure, was over saturated and could not meet the requirements to obtain a valid model. The number of items used to develop each measure was more than SmartPLS (Ringle et al., 2005) needed, or could even handle, to conduct a path analysis. In order to eliminate unnecessary and redundant questions from each variable, factor analysis was used in SPSS® to determine the items with the strongest loadings.

Factor analysis was used, along with a review of the survey instrument questions, in an iterative fashion to eliminate enough questions so the path model would run and be valid. A full listing of the factor analysis performed on the measures can be found in Appendix C. Kline (1991) originally recommended that researchers have five participants for every model parameter. In later research, the recommended sample size for an SEM model had grown to 20 respondents for every parameter in the model (Kline, 2010). The original data contained 97 Likert-type scale measurement items (parameters) that would need to be incorporated into the path model. This would require a sample size of 1940 respondents. In order to produce a model that was both accurate and useful, the number of measurement items needed to be reduced.

The items selected for the turnover intentions are captured in Table 3. Although the majority of the reliabilities were slightly lower than Riddel's (2010) reliability values, the Cronbach's alpha values achieved for the path model were all considered reliable. This is further demonstrated when comparing the calculated reliabilities with the reliabilities from the measure's source. The OPTEMPO measurement items provided the most concern. OPTEMPO showed evidence in the factor analysis of measuring three different factors. The two strongest loading questions from the factor that measured wartime deployment tempo were selected for the model, but with only two questions this measure is also not very reliable for the overall model. An overview of the model, containing the Cronbach's alpha values for the variables, can be found in Appendix E. The final path model developed for this research contains 48 measurement items, which would mean the recommended number of respondents would be 960 based on Kline's (2010) recommendation for power. However, the actual sample population for this study

was 364. Re-sampling, using bootstrapping, increased the power of the available observations in order to produce the final path model.

Table 3: Questions Selected for Path Model

Measure	Question Numbers	Source of Measure	Reported Reliability	Riddel's Reliability	Calculated Reliability
Turnover Intentions	19, 21, & 24	Riddel, 2010 (ad hoc measure)	$\alpha = 0.90$		$\alpha = 0.87$
Job Satisfaction		Spector, 1997		$\alpha = 0.83$	$\alpha = 0.79$
Pay	1, 4*, & 7*		$\alpha = 0.75$	$\alpha = 0.82$	$\alpha = 0.79$
Promotion	2*, 5, & 11		$\alpha = 0.73$	$\alpha = 0.68$	$\alpha = 0.74$
Nature of Work	2, 3, & 4 (from in-garrison section)		$\alpha = 0.78$	$\alpha = 0.87$	$\alpha = 0.88$
Organizational Commitment		Meyer et al., 1993 Meyer et al., 1997		$\alpha = 0.88$	$\alpha = 0.82$ CE
Affective	16*, 19, & 21*		$\alpha = 0.82$ (occupation)	$\alpha = 0.82$ CE	$\alpha = 0.81$ CE
Normative	5, 8, & 14		$\alpha = 0.80$ (occupation)	$\alpha = 0.84$ CE	$\alpha = 0.81$ CE
Continuance	6, 9, & 15		$\alpha = 0.80$ (occupation)	$\alpha = 0.79$ CE	$\alpha = 0.73$ CE
Availability of Alternatives		Griffeth et al., 2005		$\alpha = 0.84$	$\alpha = 0.87$
Ease of Movement	1, 4, & 5		3 samples $\alpha = 0.90/0.76/0.70$	$\alpha = 0.84$	$\alpha = 0.88$
Desirability of Movement	6 – 8		3 samples $\alpha = 0.78/0.84/0.85$	$\alpha = 0.91$	$\alpha = 0.91$
Networking	9 – 11		3 samples $\alpha = 0.63/0.75/0.76$	$\alpha = 0.87$	$\alpha = 0.87$
Crystallization of Alternatives	12 – 13		3 samples $\alpha = 0.59/0.77/0.82$	$\alpha = 0.71$	$\alpha = 0.71$
Perceived Organizational Support	24, 27, 29, 30*, & 32	Eisenberger et al., 1986 Eisenberger et al., 1990 Wayne et al., 1997	$\alpha = 0.97$	$\alpha = 0.92$ CE	$\alpha = 0.89$ CE
Operations Tempo	7 & 10	Riddel, 2010 (ad hoc measure)	$\alpha = 0.77$		$\alpha = 0.72$
Interrole Conflict		Netemeyer et al., 1996		$\alpha = 0.89$	$\alpha = 0.81$
Work-Family Conflict	14, 16, & 18		$\alpha = 0.88$	$\alpha = 0.92$	$\alpha = 0.90$
Family-Work Conflict	19, 21, & 23		$\alpha = 0.88$	$\alpha = 0.89$	$\alpha = 0.85$
Life Domain	5 – 7	Riddel, 2010 (ad hoc measure)	$\alpha = 0.76$		$\alpha = 0.94$

* Denotes Reverse Coded Questions

The next step in the analysis was to show convergent, discriminant, and construct validity of the path model. This validity check determines if the model is valid, and if the results can be used to explain the model. The convergent validity was shown to be good based on significant t-values which correspond to p-values being less than 0.05. After demonstrating convergent validity, the next validity check required for a usable model was a discriminant validity test.

The first test for discriminant validity was met as the correlations between the measurement items and their respective latent variables show an acceptable pattern of loading as prescribed by Gefen and Straub (2005). The second test for discriminant validity is shown in Table 4. The square root of the Average Variance Extracted (AVE) must be greater than the correlations between the different variables. If the square root of the AVE meets this test, then it is justified to consider the latent variables as distinct theoretical constructs (Hulland, 1999). As shown in Table 4, all points of this test are met.

Finally, the construct validity is assessed. Construct validity represents how much variance is explained by the endogenous variables, which is determined from the R-squared value. The model for this research contains three endogenous variables (mediator variables are also endogenous). Job satisfaction, organizational commitment, and turnover intentions have R-squared values of 0.41, 0.35, and 0.30, respectively. These R-squared values are considered to be between the moderate to large effect size (Cohen, 1988) and are acceptable to show construct validity. The path model is now considered valid, and the results can be presented with confidence.

Table 4: Square Root of AVE and Correlations

	Availability of Alternatives	Interrole Conflict	Job Satisfaction	Life Domain	Operations Tempo	Organizational Commitment	Perceived Organizational Support (POS)	Turnover Intentions
Availability of Alternatives	**0.6027**							
Interrole Conflict	0.2696	**0.7136**						
Job Satisfaction	-0.4776	-0.2136	**0.6056**					
Life Domain	-0.0083	0.1582	0.2144	**0.9442**				
Operations Tempo	-0.2687	-0.088	0.2897	0.1864	**0.8753**			
Organizational Commitment	-0.3747	-0.0128	0.4105	0.071	0.2229	**0.6445**		
Perceived Organizational Support (POS)	-0.3949	-0.1918	0.543	0.1178	0.3032	0.5658	**0.8389**	
Turnover Intentions	0.4984	0.0586	-0.4138	-0.137	-0.2511	-0.4948	-0.4267	**0.8921**

Results

The results section is divided into two parts. The first part reports the results from the independent t-tests for all groups that were compared. The second part reports the results from the SEM path modeling. These are two independent analysis procedures to answer different research questions.

Independent t-testing.

The SPSS® t-test result tables, which determine perception differences between the various groups, are located in Appendix D. Table 5 shows a breakdown of the t-

testing results to determine if there were any perception differences with regard to turnover intentions. A total of nine subgroups within the CE CGO population were tested for their perceptions of turnover intentions. Table 5 shows the mean, standard deviation (SD), t-statistic, degrees of freedom, and the p-values for all nine groups tested.

Table 5: Independent t-testing Results

Groups within CE CGOs	Mean	SD	t-value	df	p-value
Males	3.98	1.43	-0.58	81	0.57
Females	4.17	1.48			
Deployed = 0	4.09	1.24	0.84	198.90	0.40
Deployed > 0	3.93	1.57			
Deployed < 3	3.91	1.71	0.50	110	0.62
Deployed ≥ 3	3.76	1.46			
Deployed < 1 or > 1	3.83	1.35	-1.02	249.83	0.31
Deployed = 1	4.01	1.61			
Deployed < 2 or > 2	4.08	1.56	1.45	130	0.15
Deployed = 2	3.71	1.42			
Deployed < 3 or > 3	4.06	1.38	0.67	68	0.50
Deployed = 3	3.84	1.40			
Single	4.17	1.21	2.89	276.22	0.004**
Married	3.70	1.57			
Age < 30	4.13	1.37	2.97	196	0.003**
Age ≥ 30	3.53	1.50			
CGOs with PE	4.01	1.75	-0.69	24	0.50
CGOs without PE	3.58	1.40			

** $p < .01$

The only groups that showed a perception difference with regards to turnover intentions were marital status and age. There was a significant difference between single CE CGOs and their married counterparts regarding perceptions of turnover intentions. Additionally, CE CGOs under 30 years of age differed significantly in their perceptions of turnover intentions compared to the CE CGOs who were 30 years old or older. Beyond these two groups, the results for the other groups showed no significant difference in their perceptions of turnover intentions. Of note in this research, several subgroups of CE CGO deployment tempo were tested for perception differences with regard to turnover intentions. Although the results showed no significance in perception differences, this may be explained by the population tested. The CE CGO population in early 2010 did not have a significant number of personnel who had deployed consistently with more than three deployments. There were only 15.5% of the respondents who reported having three or more deployments. After testing for perception differences within the CE CGO population, this research undertook a path model (SEM) based approach to determine the most significant factors that influence turnover intentions.

Structural Equation Modeling.

All results reported in this section are supported by the quality criteria report from SmartPLS (Ringle et al., 2005) located in Appendix E and address the ten hypotheses that test the model. Figure 5 shows the entire path model, along with the coefficients, p-values, and R-squared values. The results of this model showed that POS and availability of alternatives are the most significant exogenous variables and that organizational commitment was the most significant mediator variable. Job satisfaction was also a significant mediator directly relating to turnover intentions.

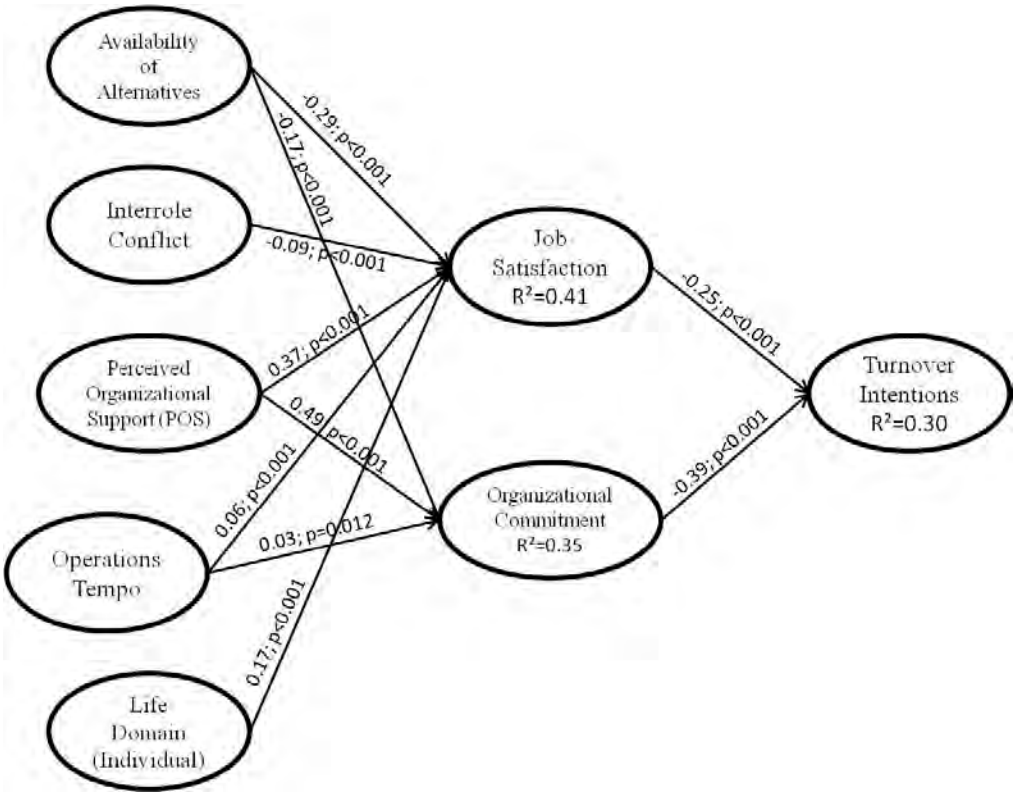

Figure 5: Path Model with Causal Results

The following hypotheses results support Figure 5, and provide the direct effects of the inner model relationships. Table 6 provides a summary of the hypothesis discussion. All the hypotheses for this research were supported, and the relationships between the exogenous variables and the mediators made intuitive sense based on research in the turnover intention field. The path coefficients that provided significant explanation of the variance in the model were availability of alternatives, POS, life domain, job satisfaction, and organizational commitment. Interrole conflict and OPTEMPO provided very little explanation of the model, but were still statistically significant due to the re-sampling process of bootstrapping. The least supported path

coefficient was between OPTEMPO and organizational commitment. Overall, OPTEMPO played almost no role in the model of turnover intentions for CE CGOs during the data collection period (2010).

Table 6: Hypotheses Tests

Hypothesis	Relationship	Path Coefficient	T-Statistic	P-value	Conclusion
H3	Availability of Alternatives → Job Satisfaction	-0.29	25.15	0.000	Supported
H4	Availability of Alternatives → Organizational Commitment	-0.17	11.53	0.000	Supported
H5	Interole Conflict → Job Satisfaction	-0.09	6.64	0.000	Supported
H6	POS → Job Satisfaction	0.37	32.11	0.000	Supported
H7	POS → Organizational Commitment	0.49	35.14	0.000	Supported
H8	OPTEMPO → Job Satisfaction	0.06	4.65	0.000	Supported
H9	OPTEMPO → Organizational Commitment	0.03	2.25	0.012	Supported
H10	Life Domain → Job Satisfaction	0.17	14.94	0.000	Supported
H1	Job Satisfaction → Turnover Intentions	-0.25	18.60	0.000	Supported
H2	Organizational Commitment → Turnover Intentions	-0.39	31.36	0.000	Supported

Although there is no hypothesis that addresses the total effect of the model relationships, the total effects were reported to help answer the research questions. Table 7 shows the path model total effects of the exogenous variables related to turnover

intentions. Several interesting findings were observed in the total effects. First, both POS and availability of alternatives remain the most influential exogenous factors in the model. POS is by far the most influential when directly related to turnover intentions. Next, life domain becomes very insignificant when viewed as a direct relation to turnover intentions. This supports a view of life domain as an important element when it comes to job satisfaction, but not an important factor for turnover intentions. Finally, these total effects confirm that for the given population, and the time at which the data was collected, that interrole conflict and OPTEMPO are not significant for this turnover intentions model.

Table 7: Path Model Total Effects

Relationship	**Total Effect Path Coefficient**
Availability of Alternatives → Turnover Intentions	0.14***
Interrole Conflict → Turnover Intentions	0.02***
POS → Turnover Intentions	-0.29***
OPTEMPO → Turnover Intentions	-0.03***
Life Domain → Turnover Intentions	-0.04***

*** $p < .001$

Summary

This chapter discussed the analysis and results after conducting independent t-testing and SEM path modeling. The analysis of the data was discussed in-depth to provide a guide as to how questions were selected for the SEM path model. The path model was also fully validated using convergent, discriminant, and construct validity. The results were reported for both independent parts of this research, and all hypotheses were addressed. The next chapter will discuss the results and conclude this thesis.

V. Discussion, Conclusions, and Recommendations

This research investigated the perception differences of turnover intentions, as well as the most influential factors that drive turnover intentions. This chapter presents a discussion of the results from Chapter IV, before drawing relevant conclusions. The significance of the research is also addressed from both an academic perspective and a practical perspective in relation to the Air Force. Finally, the chapter ends with thoughts on future research that would benefit both the turnover field of study and the Air Force.

Discussion

There were two research questions addressed in this thesis. First, are there any differences in the perceptions about turnover intentions among different groups within the Civil Engineer (CE) company grade officer (CGO) population? Second, what factors most influence CE CGO turnover intentions? These research questions have helped to support findings that exist in past literature for the turnover field. Furthermore, this research has provided a guide for the Air Force CE leadership with regard to understanding the driving forces behind CE CGO turnover intentions.

The perception differences of turnover intentions within the CE CGO population were of unique interest to identify subgroups that could be considered when CE leadership addresses retention. The two subgroups in the CE CGO population that appear to have significantly different perceptions of turnover intentions are married versus single CGOs and CGOs in their 20s versus CGOs who are 30 years of age or older. The marital status finding is supported by research that showed marital status was a strong predictor

of turnover and turnover intentions (Cotton & Tuttle, 1986; Chen, 2006). The age difference is supported based on research that showed as age increases, intention to quit go down (Seybolt, 1983; Cotton & Tuttle, 1986; Werbel & Bedeian, 1989).

The other groups tested were gender, several deployment groups, and those with or without professional licensure for engineers. All of these subgroups of the CE CGO population showed no significant difference in perception of turnover intentions. For the gender subgroup, this is supported by past research that showed gender was not a significant indicator of turnover intentions (Lewis, 1992; Weisberg & Kirschenbaum, 1993).

For the deployment groups, the findings did not support the idea of a curvilinear relationship between the number of deployments and turnover intentions (Castro & Adler, 1999; Huffman et al., 2005). This might be explained by the particular group surveyed by Riddel (2010). For the CE CGO population in 2010, there was a positive relationship between operations tempo (OPTEMPO) and turnover intentions. The data showed that 84.5% of the respondents had two deployments or less. However, this population might not be the best representation to test for a curvilinear relationship between deployments and turnover intention. The other issue with the deployment data was the measurement tool that was used to collect the data. The questionnaire used for OPTEMPO was an ad hoc measurement tool, and when a factor analysis was conducted, the eight questions loaded onto three different factors. This did not provide confidence that OPTEMPO was being correctly measured.

The professional licensure subgroup aligned with education typically reported in the literature, which has shown that education is positively correlated with turnover

(Cotton & Tuttle, 1986). However, this research does not support the results of Cotton and Tuttle (1986). The lack of perception difference of turnover intentions due to professional licensure may be due to the high unemployment rate in 2010. The unemployment rate as a correlation to turnover is supported by Cotton and Tuttle (1986). Outside factors may have influenced the CE CGO population with regards to this subgroup, and this should be taken into account with these results.

Moving into the structural equation modeling (SEM) results from this research, Table 8 shows the correlations of the variables as they relate to turnover intentions from Riddel's (2010) research, as well as the current research. The correlations all show the same directionality for the relationships. The main difference is the strength of the statistical significance for all the correlations when utilizing a factor analysis to identify the best questions that measured the variable, and then conducting the model analysis with SEM.

Table 8: Comparison of Correlations

	Availability of Alternatives	Interrole Conflict	Job Satisfaction	Life Domain	Operations Tempo	Organizational Commitment	Perceived Organizational Support (POS)
Turnover Intentions (Riddel, 2010)	0.32**	0.08	-0.42**	-0.16**	-0.30**	-0.57**	-0.46**
Turnover Intentions (SEM)	0.50***	0.06***	-0.41***	-0.14***	-0.25***	-0.50***	-0.43***

** $p < .01$

*** $p < .001$

SEM enabled the current research to study the path coefficients between the variables to identify the most important exogenous and mediator variables that effect turnover intentions. This research found that perceived organizational support (POS) was the most influential exogenous variable. This is supported by research findings that POS influences turnover intentions (Blomme et al., 2010; Dawley et al., 2010). Other research has also shown that POS holds an important relationship with turnover intentions, and that employees who experience higher levels of POS are less likely to voluntarily separate (Lazarova & Caligiuri, 2001). Foong-ming (2008) found a negative path coefficient and relation ($b = -0.33$, $p < 0.001$) between POS and turnover intentions, and the current research had similar results ($b = -0.29$, $p < 0.001$). Having established the importance of POS, it is important to understand the factors that influence POS. The main drivers of POS are career development opportunities, supervisory support, and internal promotion (Foong-ming, 2008). These drivers are applicable to the CE CGO career field, and the research supports the concept that increased POS will give the best results towards influencing a reduction in turnover intentions.

The research also found that the most influential mediating variable was organizational commitment ($b = -0.39$, $p < 0.001$). This is supported by the literature in which other research found that organizational commitment is a stronger predictor of turnover than overall job satisfaction (Griffeth et al., 2000). The negative correlation between organizational commitment and turnover intentions is also supported by previous research into turnover intentions (Porter et al., 1974; Porter et al., 1976; Mathieu & Zajac, 1990; Elangovan, 2001). Job satisfaction was not totally discounted as a mediating variable, as it had a moderate relation with turnover intentions ($b = -0.25$,

$p < 0.001$). This supports the research of Price and Mueller (1981), who reported that job satisfaction has a significant effect as a mediating variable within a turnover intentions model.

The two most influential exogenous variables that explained the majority of the mediators were POS and availability of alternatives. In fact, the availability of alternatives presented a moderate relation to job satisfaction (b = -0.29, $p < 0.001$), organizational commitment (b = -0.17, $p < 0.001$), and turnover intentions (b = 0.14, $p < 0.001$). These results support research by Griffeth et al. (2000), who found that perceived alternatives modestly predict turnover. With that said, controlling availability of alternatives outside the Air Force is not achievable. There is research suggesting that making the current job more attractive through monetary incentives could result in lower turnover intentions for professional white-collar workers (Cotton & Tuttle, 1986).

Life domain presented a moderate relation with job satisfaction (b = 0.17, $p < 0.001$) but a very weak connection with turnover intentions (b = -0.04, $p < 0.001$). These results do not support Mitchell et al. (2001) and their evidence that supported each of the six dimensions of job embeddedness as having a significant relation to turnover. Life domain explained very little overall in the turnover intentions model. It did provide some clarity of the job satisfaction variable, but beyond that life domain was not a very influential variable is this research.

The remaining factors all showed weak overall connections within all parts of the model. OPTEMPO had a weak positive relation with the mediating variables and a weak negative relation with turnover intentions. The path coefficient was positively related to job satisfaction (b = 0.06, $p < 0.001$) and organizational commitment (b = 0.03, $p =$

0.012). Somewhat surprisingly, OPTEMPO was negatively related to turnover intentions (b = -0.03, $p < 0.001$). These results do not support Huffman et al. (2005), who found that OPTEMPO was a concern for many junior officers (CGOs), especially when deployments were regarded as too long and too frequent. This is possibly explained by the lack of deployments in the population sample. Out of the respondents within the CE CGO career field (N = 364), 65.9% had one or zero deployments. Therefore, it is difficult for deployments to be regarded as too long or too frequent if the population has not deployed a significant number of times.

Finally, interrole conflict was weakly correlated with the mediators and turnover intentions. The path coefficients did not explain a significant portion of the model. The path coefficient was negatively related to job satisfaction (b = -0.09, $p < 0.001$), and the total effect between interrole conflict and turnover intentions was positively related (b = 0.02, $p < 0.001$). These results support research by Blomme et al. (2010) who found that employees who reported more work-family conflict also reported a higher turnover intention. Although the results support past research, they are not a significant part of the current turnover intentions model. For the CE CGO population, interrole conflict does not explain a significant amount of the variance within the turnover intentions model.

Conclusions of Research

The first research question investigated differences in perceptions about turnover intentions among different groups within the CE CGO population. The results show that there are perception differences within two subgroup categories: marital status and age. The implications of these results could provide guidance to CE leadership when

investigating future retention issues. The results can also be generalized across the military and private sector employees, as they support past research across diverse populations (Cotton & Tuttle, 1986).

The second research question addressed the factors that most influence CE CGO turnover intentions. The most significant exogenous variable in the turnover intentions model was POS, which explained the most variance within the model for both mediator variables; it also had a moderate path coefficient with turnover intentions. Research suggests that POS is mainly influenced by career development opportunities, supervisory support, and internal promotion (Foong-ming, 2008). These drivers of POS can be applied to the CE CGO population to reduce voluntary turnover. The most significant mediator in the turnover model was organizational commitment. Both significant exogenous and mediator variables are consistent with past research (Griffeth et al., 2000; Lazarova & Caligiuri, 2001; Foong-ming, 2008).

Limitations

As with all research, there were limitations with this research as well. First, the research relied on self-reported data. Although self-reported measures are common in organizational and management research, they are not verifiable by other means. There is also no way to conclude if the observed variance is due to an interaction between the measures, or if it is caused by the respondent's interpretation of the questions. There is also a social aspect that influences respondents to answer questions in a manner that does not reflect their true feeling on the subject. This undue influence can occur if respondents

do not believe that the survey is truly confidential, and that their true answers would negatively affect aspects of their lives such as their career.

Second, the data used for this research was secondary data and some useful information was not collected. For the purpose of studying turnover intentions, it would have been useful to have the respondents' active duty service commitment (ADSC). The ADSC information would have added to the reliability of the respondents' actual turnover intentions.

Third the extent to which these results can be generalized across the Air Force or further to the private sector is a concern. The research used secondary data from a survey administered only to CE CGOs, but this population of CE officers is a very small percentage of the total population of Air Force employees. CGOs have a second demographic issue, as they do not reflect the complete age range of the total Air Force officer corps.

Fourth, this turnover intention model is experimental and requires future validation. The model presented in this thesis was developed based on past research (Riddel, 2010), but is an expanded form of the model of turnover intentions. The results in this thesis are therefore a new representation of how turnover intentions are influenced. The results are valid for the population surveyed, but future research utilizing this model with a more diverse model will be required to validate the findings of this research.

Finally, the use of bootstrapping within Partial Least Square (PLS) SEM has an apparent effect on the statistical significance regardless of the path coefficient value. PLS-based SEM is an appropriate analysis method for the majority of SEM studies (Hubona, 2009). SmartPLS (Ringle et al., 2005) relies on bootstrapping as a valid

instrument to produce t-values for statistical significance. This process of bootstrapping can drive a statically significant t-value, regardless of the path coefficient's importance in the model. Bootstrapping relies on the assumption that the data collected from the sample represents the population and, therefore, deserves mention in the limitations as this research is concluded.

Significance of Research

The significance of this research to the turnover field of study was the creation of a new model testing the relation and influential significance of variables to turnover intentions. The model showed relevance as it supported much of the past research in the study of turnover and turnover intentions. The groundwork for this model and SEM analysis was rooted in the initial study of CE CGOs using a similar simplified model of turnover intentions by Riddel (2010). The current research and new turnover intention model adds support to the longstanding study of turnover.

The significance of this research to the Air Force is in better understanding the factors that drive turnover intentions within employees. This research is directly applicable to the understanding of CE CGOs and what drives their turnover intentions. CE leaders may find it very beneficial to understand which factors are most significant when they are trying to retain the best personnel. This research could improve how the Air Force, and CE leaders, influence retention through programs, actions, and leadership behaviors. With a long period of conflict coming to a close, it is of vital importance to understand how every leader can drive turnover intentions to an appropriate level to maintain the best personnel for future missions and the task of training new officers.

Recommendations for Future Research

Validate the turnover intentions model from this thesis by testing it with a different and more diverse population. This validation is important for the future usability of the turnover intention model based on this research. An effective model is required to determine the most likely factors that will influence turnover intentions at any given time during an employee's service.

Collect data from enlisted career fields experiencing low retention trends, and determine which factors are driving the turnover intentions. This line of research would be of interest to see if enlisted concerns are the same as officer concerns regarding turnover. The enlisted population may also provide a unique look at deployment tempo and provide a robust population with more, and longer (duration of each deployment), deployment experience.

Collect data from enlisted career fields using the same questionnaire, and use a multi-trait multi-method (MTMM) matrix to determine if the questionnaire is measuring the same factors between the officer and enlisted populations. This research would be interesting to determine if each factor measurement tool is measuring the same trait between white-collar and blue-collar workers in the military. This could be expanded to include government civilians to further determine if traits are equally measured across all military job structures.

Develop a more accurate OPTEMPO survey instrument. In order to accurately measure the effects of a wartime environment, it is important to measure the correct trait. The current survey (see Appendix A) actually measures three different factors when asking respondents about OPTEMPO. A more focused measurement tool that

concentrates on deployment tempo overseas in the war or conflict region would be a more accurate measure for testing how a wartime environment influences turnover intentions.

Collect OPTEMPO data from a larger population (e.g., officers and enlisted), and investigate whether there is a stronger influence on turnover intentions. This research would provide the best possibility to see if OPTEMPO directly influences turnover intentions. A larger population could provide a robust and diverse sample of various deployment experiences. This wide range of deployment tempo would allow for a non-biased look at OPTEMPO as a driver of turnover intentions.

Collect OPTEMPO data from a larger population, and attempt to support the theory of a curvilinear relationship between OPTEMPO and turnover intentions. An interesting theory within the literature is the idea of a curvilinear relationship between deployments and turnover intentions (Castro & Adler, 1999; Huffman et al., 2005). Testing this theory as accurately as possible would be of great benefit to the military. If future research could initially find support for the curvilinear theory, and then determine the ideal number of deployments, taking deployments into account for potential turnover could be better understood.

Summary

This research presented a problem facing the Air Force CE CGO career field and highlighted a larger retention problem being faced during the current long period of conflict. Through a detailed literature review of factors influencing turnover intentions, and the prior study conducted by Riddel (2010), this research constructed a detailed

model of turnover intentions. Two proven methodologies, independent t-testing and PLS-based SEM, were then applied to determine how subgroups in the CE CGO career field perceive turnover intentions and to determine the most important drivers of turnover intentions. The findings of this research can be thoughtfully applied to the CE CGO personnel, and if the bulk of the actions address POS, the CE leadership should find a decrease in turnover intentions (i.e., CGOs will be less likely to voluntarily separate from the Air Force).

Appendix A

Air Force Civil Engineer Officer Attitudes Questionnaire

Part I

Job Attitudes

We would like to understand how you feel about different aspects of your job. For each statement, please fill in the circle for the number that indicates the extent to which you believe the statement is true. Use the scale below for your responses.

① **Strongly Disagree**	② **Disagree**	③ **Slightly Disagree**	④ **Neither Agree or Disagree**	⑤ **Slightly Agree**	⑥ **Agree**	⑦ **Strongly Agree**

1.	I feel I am being paid a fair amount for the work I do.	①	②	③	④	⑤	⑥	⑦
2.	There is really too little chance for promotion on my job.	①	②	③	④	⑤	⑥	⑦
3.	Many of our rules and procedures make doing a good job difficult.	①	②	③	④	⑤	⑥	⑦
4.	Raises are too few and far between.	①	②	③	④	⑤	⑥	⑦
5.	Those who do well on the job stand a fair chance of being promoted.	①	②	③	④	⑤	⑥	⑦
6.	My efforts to do a good job are seldom blocked by red tape.	①	②	③	④	⑤	⑥	⑦
7.	I feel unappreciated by the Air Force when I think about what they pay me.	①	②	③	④	⑤	⑥	⑦
8.	People get ahead as fast here as they do in other places (i.e., private sector).	①	②	③	④	⑤	⑥	⑦
9.	I have too much to do at work.	①	②	③	④	⑤	⑥	⑦
10.	I feel satisfied with my chances for salary increases.	①	②	③	④	⑤	⑥	⑦
11.	I am satisfied with my chances for promotion.	①	②	③	④	⑤	⑥	⑦
12.	I have too much paperwork.	①	②	③	④	⑤	⑥	⑦
13.	All things considered (i.e., pay, promotion, operating conditions, nature of work), I feel satisfied with my present job.	①	②	③	④	⑤	⑥	⑦
14.	The demands of my work interfere with my home and family life.	①	②	③	④	⑤	⑥	⑦
15.	The demands of my family or spouse/significant other interfere with work-related activities.	①	②	③	④	⑤	⑥	⑦
16.	The amount of time my duties take up makes it difficult to fulfill family responsibilities.	①	②	③	④	⑤	⑥	⑦
17.	I have to put off doing things at work because of demands on my time at home.	①	②	③	④	⑤	⑥	⑦

① **Strongly Disagree**	② **Disagree**	③ **Slightly Disagree**	④ **Neither Agree or Disagree**	⑤ **Slightly Agree**	⑥ **Agree**	⑦ **Strongly Agree**

18.	Things I want to do at home do not get done because of the demands my job puts on me.	①	②	③	④	⑤	⑥	⑦
19.	Things I want to do at work don't get dome because of the demands of my family or spouse/partner.	①	②	③	④	⑤	⑥	⑦
20.	My job produces strain that makes it difficult to fulfill family duties.	①	②	③	④	⑤	⑥	⑦
21.	My home life interferes with my responsibilities at work such as getting to work on time, accomplishing daily tasks, and working overtime.	①	②	③	④	⑤	⑥	⑦
22.	Due to work-related duties, I have to make changes to my plans for family activities.	①	②	③	④	⑤	⑥	⑦
23.	Family-related strain interferes with my ability to perform job-related duties.	①	②	③	④	⑤	⑥	⑦

We would like to understand how you feel about the nature of the work you do. For each statement, please indicate how you feel with respect to your day to day job at your normal duty station, your deployed job, and jobs you may hold in the future as a more senior CE officer (e.g., operations flight commander, squadron commander). For each statement, please fill in the circle for the number that indicates the extent to which you believe the statement is true. Use the scale below for your responses. If you have not deployed, leave that section blank.

① **Strongly Disagree**	② **Disagree**	③ **Slightly Disagree**	④ **Neither Agree or Disagree**	⑤ **Slightly Agree**	⑥ **Agree**	⑦ **Strongly Agree**

	In garrison job	My deployed job (if applicable)	My future duties as a senior CE officer
1. I sometimes feel my job is meaningless.	① ② ③ ④ ⑤ ⑥ ⑦	① ② ③ ④ ⑤ ⑥ ⑦	① ② ③ ④ ⑤ ⑥ ⑦
2. I like doing the things I do at work.	① ② ③ ④ ⑤ ⑥ ⑦	① ② ③ ④ ⑤ ⑥ ⑦	① ② ③ ④ ⑤ ⑥ ⑦
3. I feel a sense of pride in doing my job.	① ② ③ ④ ⑤ ⑥ ⑦	① ② ③ ④ ⑤ ⑥ ⑦	① ② ③ ④ ⑤ ⑥ ⑦
4. My job is enjoyable.	① ② ③ ④ ⑤ ⑥ ⑦	① ② ③ ④ ⑤ ⑥ ⑦	① ② ③ ④ ⑤ ⑥ ⑦

Part II

General Attitudes toward CE and the Air Force

We would like to understand how you feel about the Civil Engineer career field and the Air Force. For each statement, please fill in the circle for the number that indicates the extent to which you believe the statement is true. For each statement, please provide a response for both CE Career Field and Air Force. Use the scale below for your responses.

① **Strongly Disagree**	② **Disagree**	③ **Slightly Disagree**	④ **Neither Agree or Disagree**	⑤ **Slightly Agree**	⑥ **Agree**	⑦ **Strongly Agree**

		CE Career Field	Air Force
1.	I would be very happy to spend the rest of my career in the _____.	① ② ③ ④ ⑤ ⑥ ⑦	① ② ③ ④ ⑤ ⑥ ⑦
2.	I do not feel any obligation to remain with the _____.	① ② ③ ④ ⑤ ⑥ ⑦	① ② ③ ④ ⑤ ⑥ ⑦
3.	I am not afraid of what might happen if I quit the _____without having another job lined up.	① ② ③ ④ ⑤ ⑥ ⑦	① ② ③ ④ ⑤ ⑥ ⑦
4.	I enjoy discussing the _____with people outside it.	① ② ③ ④ ⑤ ⑥ ⑦	① ② ③ ④ ⑤ ⑥ ⑦
5.	Even if it were to my advantage, I do not feel it would be right to leave the _____now.	① ② ③ ④ ⑤ ⑥ ⑦	① ② ③ ④ ⑤ ⑥ ⑦
6.	It would be very difficult for me to leave the _____right now, even if I wanted to.	① ② ③ ④ ⑤ ⑥ ⑦	① ② ③ ④ ⑤ ⑥ ⑦
7.	I really feel as if the _____ problems are my own.	① ② ③ ④ ⑤ ⑥ ⑦	① ② ③ ④ ⑤ ⑥ ⑦
8.	I would feel guilty if I left the _____now.	① ② ③ ④ ⑤ ⑥ ⑦	① ② ③ ④ ⑤ ⑥ ⑦
9.	Too much of my life would be disrupted if I decided I wanted to leave the _____right now.	① ② ③ ④ ⑤ ⑥ ⑦	① ② ③ ④ ⑤ ⑥ ⑦
10.	I think I could easily become attached to another organization as I am to the _____.	① ② ③ ④ ⑤ ⑥ ⑦	① ② ③ ④ ⑤ ⑥ ⑦
11.	The _____deserves my loyalty.	① ② ③ ④ ⑤ ⑥ ⑦	① ② ③ ④ ⑤ ⑥ ⑦
12.	It wouldn't be too costly for me to leave the _____in the near future.	① ② ③ ④ ⑤ ⑥ ⑦	① ② ③ ④ ⑤ ⑥ ⑦

① **Strongly Disagree**	② **Disagree**	③ **Slightly Disagree**	④ **Neither Agree or Disagree**	⑤ **Slightly Agree**	⑥ **Agree**	⑦ **Strongly Agree**

		CE Career Field	Air Force
13.	I do not feel like ―part of the family‖ in the _____.	① ② ③ ④ ⑤ ⑥ ⑦	① ② ③ ④ ⑤ ⑥ ⑦
14.	I would not leave the _____right now because I have a sense of obligation to the people in it.	① ② ③ ④ ⑤ ⑥ ⑦	① ② ③ ④ ⑤ ⑥ ⑦
15.	Right now, staying with the _____ is a matter of necessity as much as a desire.	① ② ③ ④ ⑤ ⑥ ⑦	① ② ③ ④ ⑤ ⑥ ⑦
16.	I do not feel ―emotionally attached‖ to the _____.	① ② ③ ④ ⑤ ⑥ ⑦	① ② ③ ④ ⑤ ⑥ ⑦
17.	I owe a great deal to the _____.	① ② ③ ④ ⑤ ⑥ ⑦	① ② ③ ④ ⑤ ⑥ ⑦
18.	I believe I have too few options to consider leaving the _____.	① ② ③ ④ ⑤ ⑥ ⑦	① ② ③ ④ ⑤ ⑥ ⑦
19.	The _____has a great deal of personal meaning to me.	① ② ③ ④ ⑤ ⑥ ⑦	① ② ③ ④ ⑤ ⑥ ⑦
20.	One of the few negative consequences of leaving the _____would be scarcity of available alternatives.	① ② ③ ④ ⑤ ⑥ ⑦	① ② ③ ④ ⑤ ⑥ ⑦
21.	I do not feel a strong sense of belonging to the _____.	① ② ③ ④ ⑤ ⑥ ⑦	① ② ③ ④ ⑤ ⑥ ⑦
22.	One of the major reasons I continue to work for the _____is that leaving would require considerable personal sacrifice; another organization may not match the overall benefits I have here.	① ② ③ ④ ⑤ ⑥ ⑦	① ② ③ ④ ⑤ ⑥ ⑦
23.	If I had not already put so much of myself into the _____, I might consider working elsewhere.	① ② ③ ④ ⑤ ⑥ ⑦	① ② ③ ④ ⑤ ⑥ ⑦
24.	The _____strongly considers my goals and values.	① ② ③ ④ ⑤ ⑥ ⑦	① ② ③ ④ ⑤ ⑥ ⑦
25.	The _____disregards my best interests when it makes decisions that affect me.	① ② ③ ④ ⑤ ⑥ ⑦	① ② ③ ④ ⑤ ⑥ ⑦
26.	Help is available from the _____ when I have a problem.	① ② ③ ④ ⑤ ⑥ ⑦	① ② ③ ④ ⑤ ⑥ ⑦
27.	The _____really cares about my well-being.	① ② ③ ④ ⑤ ⑥ ⑦	① ② ③ ④ ⑤ ⑥ ⑦
28.	Even if I did the best job possible, the _____would fail to notice.	① ② ③ ④ ⑤ ⑥ ⑦	① ② ③ ④ ⑤ ⑥ ⑦

① **Strongly Disagree**	② **Disagree**	③ **Slightly Disagree**	④ **Neither Agree or Disagree**	⑤ **Slightly Agree**	⑥ **Agree**	⑦ **Strongly Agree**

	CE Career Field	Air Force
29. The _____cares about my general satisfaction at work.	① ② ③ ④ ⑤ ⑥ ⑦	① ② ③ ④ ⑤ ⑥ ⑦
30. The _____shows little concern for me.	① ② ③ ④ ⑤ ⑥ ⑦	① ② ③ ④ ⑤ ⑥ ⑦
31. The _____cares about my opinions.	① ② ③ ④ ⑤ ⑥ ⑦	① ② ③ ④ ⑤ ⑥ ⑦
32. The _____takes pride in my accomplishments at work.	① ② ③ ④ ⑤ ⑥ ⑦	① ② ③ ④ ⑤ ⑥ ⑦

Part III

Operations Tempo

We would like to understand the operations tempo you have experienced and how you feel about it. If you travelled from your normal duty station on deployment orders, consider your mission a deployment even if you did not leave CONUS. Otherwise, consider your mission a TDY. For the following items, respond to the best of your knowledge by WRITING IN THE INFORMATION requested.

1. Since entering the Air Force, how many deployments have you been on? (Include the current deployment if you are currently deployed)
   _____deployment(s)

2. Since entering the Air Force, how much time have you spent deployed (report the total considering all deployments and include the time currently if you are deployed as you complete this)?
   _____month(s) _____day(s)

3. Since entering the Air Force, how many Joint Expeditionary Tasking deployments (previously known as In-Lieu-Of or ILO deployments) have you been on? (Include current deployment if you are currently fulfilling a Joint Expeditionary Tasking).
   _____Joint Expeditionary Tasking deployment(s)

4. Over the previous 12 months, how many days have you spent away from your duty station? (i.e., TDY – not to include days deployed)

_____day(s)

5. Over the previous 12 months, how many training exercises have you participated in? (i.e., Silver Flag, Eagle Flag, etc.)
_____exercises(s)

6. In the past 12 months, how many times have you had to work longer than your normal duty day? (Consider a normal duty day to be 0730-1630, Monday through Friday).
_____time(s)

For the following items, indicate the extent to which you are satisfied with the statement. Use the scale below for your responses.

① **Very Dissatisfied**	② **Dissatisfied**	③ **Somewhat Dissatisfied**	④ **Neither Satisfied or Dissatisfied**	⑤ **Somewhat Satisfied**	⑥ **Satisfied**	⑦ **Very Satisfied**

7.	How satisfied are you with the number of deployments time you have been deployed?	①	②	③	④	⑤	⑥	⑦
8.	How satisfied are you with the length (days deployed) of those deployments?	①	②	③	④	⑤	⑥	⑦
9.	How satisfied are you with the frequency of deployments (i.e., dwell ratio)?	①	②	③	④	⑤	⑥	⑦
10.	Overall, how satisfied are you with your deployment experience (i.e., number, length, and frequency)?	①	②	③	④	⑤	⑥	⑦
11.	Over the previous 12 months, how satisfied are you with the number of days that you have spent away from your duty station (i.e., TDY – not to include days deployed)?	①	②	③	④	⑤	⑥	⑦
12.	Over the previous 12 months, how satisfied are you with the number of training exercises that you have participated in (i.e., Silver Flag, Eagle Flag, etc.)?	①	②	③	④	⑤	⑥	⑦
13.	Over the previous 12 months, how satisfied are you with the number of times that you have had to work longer than your normal duty day?	①	②	③	④	⑤	⑥	⑦
14.	Overall, how satisfied are you with your perceived level of operations tempo (i.e., number of deployments, number of days TDY over the last 12 months, number of training exercises over the last 12 months, number of times you have had to work longer than your normal duty day)?	①	②	③	④	⑤	⑥	⑦

Part IV

Career Opportunities & Intentions

We would like to understand your career intentions and how you feel about the civilian labor market. Please fill in the circle for the number that indicates the extent to which you agree the statement is true. Use the scale below for your responses.

① **Strongly Disagree**	② **Disagree**	③ **Slightly Disagree**	④ **Neither Agree or Disagree**	⑤ **Slightly Agree**	⑥ **Agree**	⑦ **Strongly Agree**

1.	If I were to enter the civilian job market, I would receive many job offers from many organizations.	①	②	③	④	⑤	⑥	⑦
2.	It would be easy for me to get a job in a location where I'd prefer to work.	①	②	③	④	⑤	⑥	⑦
3.	There really aren't very many jobs for people like me in today's job market.	①	②	③	④	⑤	⑥	⑦
4.	Given my qualifications and experience, getting a new job would not be very hard at all.	①	②	③	④	⑤	⑥	⑦
5.	I can think of a number of organizations that would probably offer me a job if I was looking.	①	②	③	④	⑤	⑥	⑦
6.	If I looked for a job, I would probably wind up with a *better* job than the one I have now.	①	②	③	④	⑤	⑥	⑦
7.	By and large, the jobs I could get if I left here are *superior* to the job I have now.	①	②	③	④	⑤	⑥	⑦
8.	Most of the jobs I could get would be an *improvement* over my present circumstances.	①	②	③	④	⑤	⑥	⑦
9.	I have a far-reaching "network" of contacts which could help me find out about other job opportunities.	①	②	③	④	⑤	⑥	⑦
10.	I have contacts in other companies who might help me line up a new job.	①	②	③	④	⑤	⑥	⑦
11.	My work and/or social activities tend to bring me in contact with a number of people who might help me line up a new job.	①	②	③	④	⑤	⑥	⑦
12.	Right now, I have a job offer "on the table" from another company, if I choose to take it.	①	②	③	④	⑤	⑥	⑦
13.	I have found a better alternative than my job.	①	②	③	④	⑤	⑥	⑦
14.	I am unable to move to another place of residence now even if a better job came along.	①	②	③	④	⑤	⑥	⑦

① Strongly Disagree	② Disagree	③ Slightly Disagree	④ Neither Agree or Disagree	⑤ Slightly Agree	⑥ Agree	⑦ Strongly Agree
15. There are too many factors in my personal life (e.g., school age children, relatives, etc.) which make it very difficult for me to leave in the near future.				①	② ③ ④ ⑤ ⑥	⑦

CHECK THE BOX ☑ that best describes you.

16. Compared to other career fields, what do you feel is the current demand for your occupation in civilian employment?

- ☐ **Very High**
- ☐ **High**
- ☐ **Neither High or Low**
- ☐ **Low**
- ☐ **Very Low**

17. Suppose that you are offered an opportunity for civilian employment. Assuming that you could separate from the Air Force, how likely is it that you would choose to do so?

- ☐ **Very Likely**
- ☐ **Likely**
- ☐ **Neither Likely or Unlikely**
- ☐ **Unlikely**
- ☐ **Very Unlikely**

We would like to understand your career intentions—your individual responses will not be shared with others. Please fill in the circle for the number that best indicates your intentions.

① Strongly Disagree	② Disagree	③ Slightly Disagree	④ Neither Agree or Disagree	⑤ Slightly Agree	⑥ Agree	⑦ Strongly Agree
18. I have thought about separating.				① ② ③ ④ ⑤ ⑥		⑦
19. I am thinking of leaving the Air Force when my service commitment is up.				① ② ③ ④ ⑤ ⑥		⑦
20. I am thinking of leaving the CE career field.				① ② ③ ④ ⑤ ⑥		⑦
21. I am planning to look for a new job outside of the Air as soon as get within a year of my service commitment.				① ② ③ ④ ⑤ ⑥		⑦

① Strongly Disagree	② Disagree	③ Slightly Disagree	④ Neither Agree or Disagree	⑤ Slightly Agree	⑥ Agree	⑦ Strongly Agree
23. I expect to work within the Air Force beyond my current service commitment.						
24. I expect to work within the CE career field beyond my current commitment.						
22. I am planning to look for a new job outside of the CE career field within the next year.						

For the following items, respond by CHECKING THE BOX ☑ that best describes you.

25. Suppose that you have to decide whether to stay on active duty. Assuming that you could stay, how likely is it that you would choose to do so?

- ☐ **Very Likely**
- ☐ **Likely**
- ☐ **Neither Likely or Unlikely**
- ☐ **Unlikely**
- ☐ **Very Unlikely**

26. Which best describes your current active duty Air Force career intentions?

- ☐ **Definitely stay in until retirement**
- ☐ **Probably stay in until retirement**
- ☐ **Definitely stay in beyond present obligation, but not until retirement**
- ☐ **Undecided**
- ☐ **Probably leave upon completion of current obligation**
- ☐ **Definitely leave upon completion of current obligation**

Part V

Demographics

This final section contains items regarding your personal characteristics. These items are very important for statistical purposes. Respond to each item by WRITING IN THE INFORMATION requested or CHECKING THE BOX ☑ that best describes you

1. What is your gender?
   - ☐ **Male**
   - ☐ **Female**

2. What is your age? _____years

3. What is your rank?
   - ☐ **Second Lieutenant (O-1)**
   - ☐ **First Lieutenant (O-2)**
   - ☐ **Captain (O-3)**

4. How long have you served on Active Duty Air Force?
   _____year(s)
   _____month(s)

5. How long have you served Active Duty Air Force within the Civil Engineer Officer career field (AFSC – 32EX)?
   _____year(s)
   _____month(s)

6. What is your current marital status?
   - ☐ **Single (never married)**
   - ☐ **Married**
   - ☐ **Legally separated**
   - ☐ **Divorced**
   - ☐ **Widowed**

7. Is your spouse currently employed?
   - ☐ **No**
   - ☐ **Yes**
   - ☐ **Does not apply**

8. Do you have children?
   - ☐ **No**
   - ☐ **Yes** **If yes, how many? _____**

9. What is the highest level of education that you have completed?
   - ☐ **Bachelor's Degree** **How many? _____**
   - ☐ **Master's Degree** **How many? _____**
   - ☐ **Doctorate Degree** **How many? _____**
   - ☐ **Other (please specify) _____**

10. Have you passed the Fundamentals of Engineering (FE) exam?
    - ☐ **No**
    - ☐ **Yes**
    - ☐ **Have not taken the exam**
    - ☐ **Does not apply (not related to my specialty)**

11. Have you passed the Professional Engineers (PE) exam?

- ☐ **No**
- ☐ **Yes**
- ☐ **Have not taken the exam**
- ☐ **Does not apply (not related to my specialty)**

We would like to understand how you feel about different aspects of Air Force life. For each statement, please fill in the circle for the number that indicates the extent to which you are satisfied with the statement. Use the scale below for your responses.

⓪ N/A	① Very Dissatisfied	② Dissatisfied	③ Somewhat Dissatisfied	④ Neither Satisfied or Dissatisfied	⑤ Somewhat Satisfied	⑥ Satisfied	⑦ Very Satisfied

1.	My place of current residence (i.e., house, apartment, condominium).	⓪	①	②	③	④	⑤	⑥	⑦
2.	My home, leave, and vacation opportunities.	⓪	①	②	③	④	⑤	⑥	⑦
3.	The entertainment/recreation/club facilities that is available.	⓪	①	②	③	④	⑤	⑥	⑦
4.	My personal safety.	⓪	①	②	③	④	⑤	⑥	⑦
5.	The schools my children attend.	⓪	①	②	③	④	⑤	⑥	⑦
6.	Child care arrangements/facilities.	⓪	①	②	③	④	⑤	⑥	⑦
7.	The quality of education my children receive.	⓪	①	②	③	④	⑤	⑥	⑦
8.	The medical/dental services that is available.	⓪	①	②	③	④	⑤	⑥	⑦

Thank you for your participation!

Please include any comments you have

Appendix B

IRB Waiver

Request for Initial Research Review and IRB Waiver Qualification

In accordance with AFIT EN 40-1, please review the research description below. As the PI I do not believe the research described meets the definition of Human Subject Research as defined by AFIT EN40-1, paragraph 2.2.

Description of Research:

The purpose of this research is to test the relationship and determine causation between several attitudinal measures, operations tempo, and turnover intentions of Air Force Civil Engineering Officers using secondary data. Specific attitudes include: job satisfaction, availability of job alternatives, interrole conflict, perceived organizational support, organizational commitment, and quality of life. If results prove to be statistically relevant, the intention would be to publish the results of this study at a later time.

Research Method:

The research will evaluate secondary data using Structural Equation Modeling (SEM) to determine the causations as they relate to the factors and the dependent variable of turnover intentions. The research will also evaluate if there are differences in turnover intentions based on gender, age, and number of deployments.

Data Source:

The source of the data is secondary data that was originally collected in 2010 via survey with an IRB approval number AFIT MPA F50301. Total anonymity will be provided to all original survey participants. The secondary data for this thesis only concerns the quantitative results collected by the original survey questions.

Date: 15 Dec 2011

PI Signature: Alfred E. Thal Jr

02/23/2011-Skipper/Kinder

Reviewer Comments: I agree.

Date: JAN 4, 2012

Reviewer Signature:

Instructions: Please email the completed form or any questions you may have to HumanSubjects@afit.edu

IRB Coordinator: Lori Ann Kinder, x4543, Lori.Kinder.ctr@afit.edu

02/23/2011-Skipper/Kinder

Appendix C

Factor Analysis of Measurement Items

Interrole conflict Factor Analysis (FA):

Table: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.885
Bartlett's Test of Sphericity	Approx. Chi-Square	2466.695
	df	45
	Sig.	.000

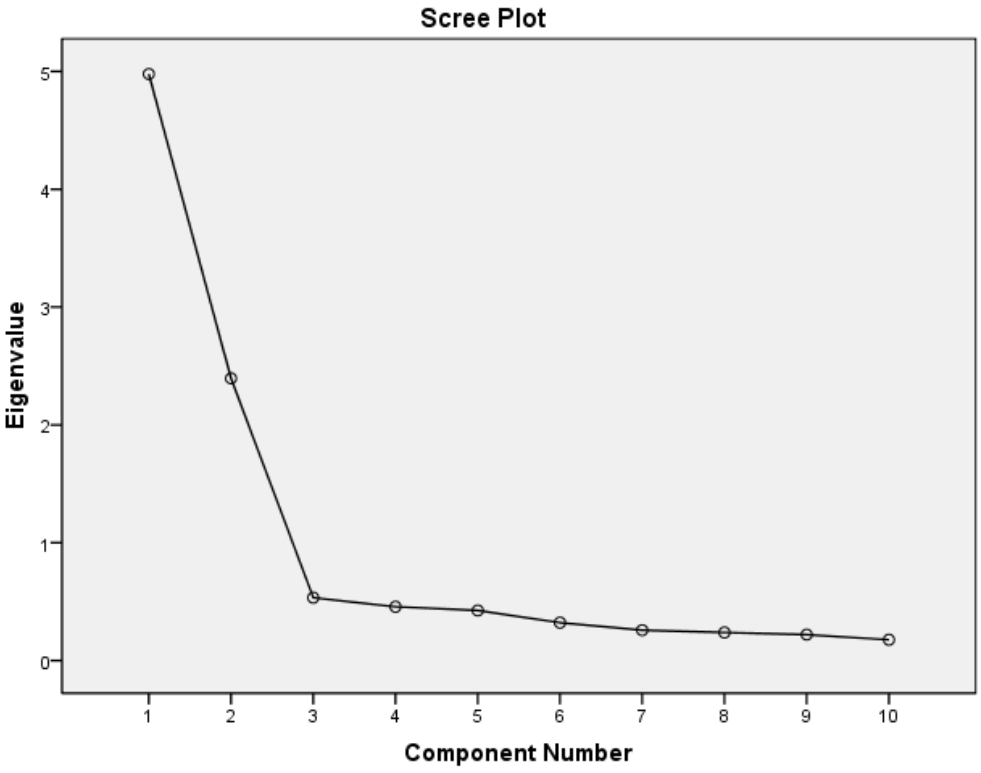

Figure: Scree Plot

Table: Rotated Component Matrix

	Component	
	1	2
P1Q14	.890	
P1Q15		.773
P1Q16	.893	
P1Q17		.814
P1Q18	.882	
P1Q19		.848
P1Q20	.852	
P1Q21		.841
P1Q22	.796	
P1Q23		.835

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 3 iterations.

Table: Component Transformation Matrix

Component	1	2
1	.752	.659
2	-.659	.752

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

POS FA:

Table: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.925
Bartlett's Test of Sphericity	Approx. Chi-Square	1847.338
	df	36
	Sig.	.000

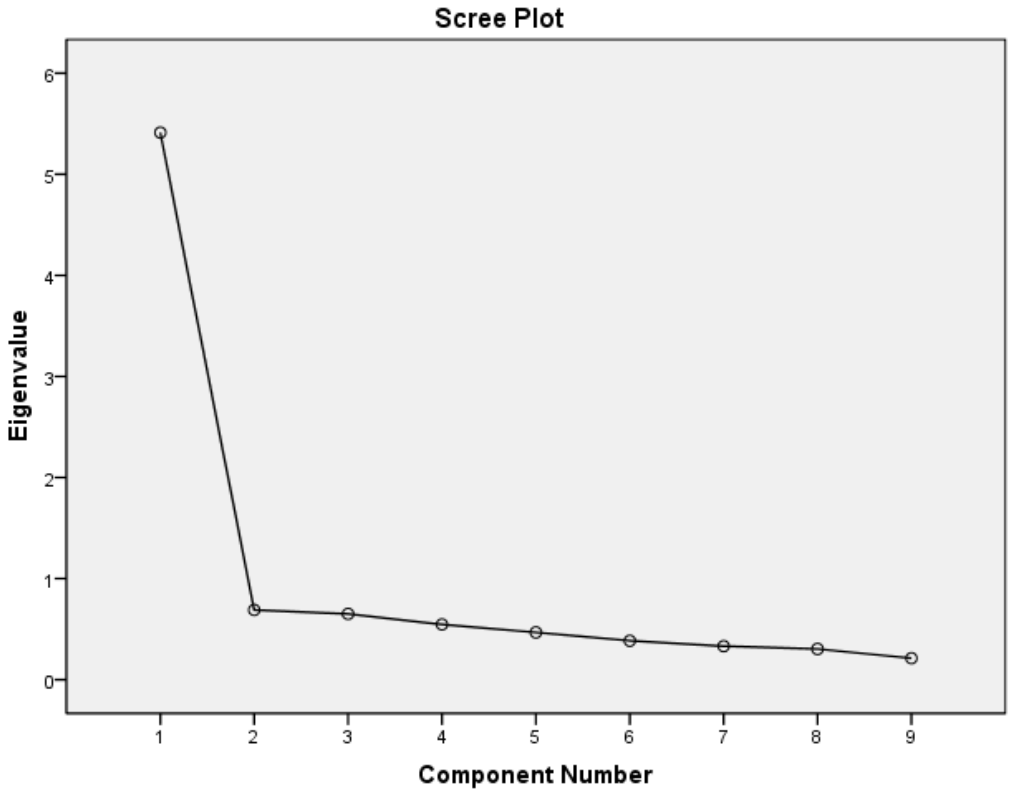

Figure: Scree Plot

Table: Component Matrix

	Component
	1
P2Q24_CE	.787
RP2Q25_CE	.621
P2Q26_CE	.709
P2Q27_CE	.851
RP2Q28_CE	.750
P2Q29_CE	.813
RP2Q30_CE	.840
P2Q31_CE	.767
P2Q32_CE	.816

Extraction Method: Principal Component Analysis.

a. 1 components extracted.

Ops Tempo FA:

Table: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.733
Bartlett's Test of Sphericity	Approx. Chi-Square	751.891
	df	28
	Sig.	.000

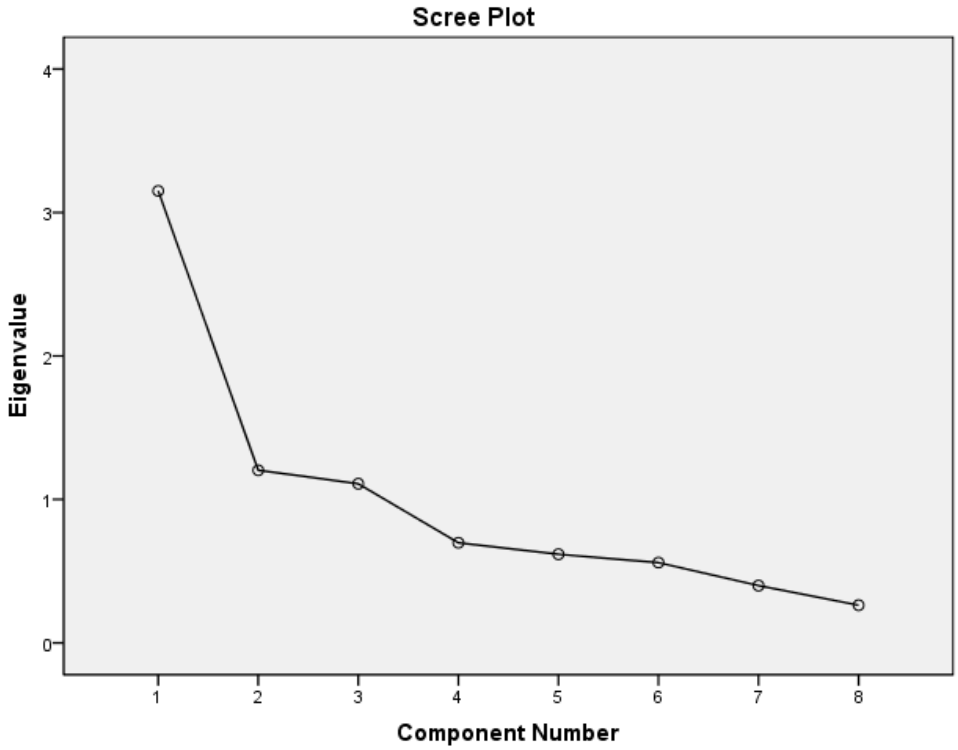

Figure: Scree Plot

Table: Rotated Component Matrix

	Component		
	1	2	3
P3Q7		.823	
P3Q8	.417	.579	
P3Q9	.741	.332	
P3Q10		.803	
P3Q11			.721
P3Q12			.842
P3Q13	.769		
P3Q14	.825		

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 4 iterations.

Table: Component Transformation Matrix

Component	1	2	3
1	.683	.606	.408
2	-.580	.789	-.202
3	-.444	-.099	.890

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

Loading Ops Tempo into one factor:

Table: Component Matrix

	Component
	1
P3Q7	.558
P3Q8	.626
P3Q9	.672
P3Q10	.693
P3Q11	.576
P3Q12	.432
P3Q13	.593
P3Q14	.804

Extraction Method: Principal Component Analysis.

a. 1 components extracted.

Life Domain FA:

Table: Rotated Component Matrix

	Component	
	1	2
P5_LD_Q1		.705
P5_LD_Q2		.732
P5_LD_Q3		.712
P5_LD_Q4		.687
P5_LD_Q5	.966	
P5_LD_Q6	.890	
P5_LD_Q7	.972	
P5_LD_Q8		.560

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 3 iterations.

Table: Component Transformation Matrix

Component	1	2
1	.830	.557
2	-.557	.830

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

Pay FA:

Table: Component Matrix

	Component
	1
Part I (Job Attitudes)	.814
RP1Q4	.794
RP1Q7	.835
P1Q10	.785

Extraction Method: Principal Component Analysis.

a. 1 components extracted.

Promotion FA:

Table: Component Matrix

	Component
	1
RP1Q2	.798
P1Q5	.758
P1Q8	.459
P1Q11	.827

Extraction Method: Principal Component Analysis.

a. 1 components extracted.

Operating Conditions FA:

Table: Component Matrix

	Component
	1
RP1Q3	.723
P1Q6	.628
RP1Q9	.631
RP1Q12	.792

Extraction Method: Principal Component Analysis.

a. 1 components extracted.

Nature of Work FA:

Table: Rotated Component Matrix

	Component		
	1	2	3
RP1_NWG_Q1	.840		
RP1_NWD_Q1		.737	
RP1_NWF_Q1	.447		.482
P1_NWG_Q2	.817		
P1_NWD_Q2		.864	
P1_NWF_Q2			.884
P1_NWG_Q3	.772		
P1_NWD_Q3		.841	
P1_NWF_Q3			.802
P1_NWG_Q4	.799		
P1_NWD_Q4		.857	
P1_NWF_Q4			.901

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 5 iterations.

Organizational Commitment

Affective Commitment FA:

Table: Component Matrix

	Component
	1
Part II (General Attitudes toward CE and the Air Force)	.718
P2Q4_CE	.651
P2Q7_CE	.426
RP2Q10_CE	.423
RP2Q13_CE	.708
RP2Q16_CE	.747
P2Q19_CE	.816
RP2Q21_CE	.824

Extraction Method: Principal Component Analysis.

a. 1 components extracted.

Normative Commitment FA:

Table: Component Matrix

	Component
	1
RP2Q2_CE	.718
P2Q5_CE	.787
P2Q8_CE	.775
P2Q11_CE	.737
P2Q14_CE	.815
P2Q17_CE	.635

Extraction Method: Principal Component Analysis.

a. 1 components extracted.

Continuance Commitment FA:

Table: Rotated Component Matrix

	Component	
	1	2
RP2Q3_CE		.754
P2Q6_CE	.759	
P2Q9_CE	.813	
RP2Q12_CE		.609
P2Q15_CE	.740	
P2Q18_CE	.473	.522
P2Q20_CE	.337	.640
P2Q22_CE	.525	.448
P2Q23_CE		.406

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 3 iterations.

Table: Component Transformation Matrix

Component	1	2
1	.766	.643
2	-.643	.766

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

Turnover Intentions FA:

Table: Component Matrix

	Component
	1
P4Q18	.645
P4Q19	.873
P4Q20	.768
P4Q21	.857
P4Q22	.735
RP4Q23	.835
RP4Q24	.850

Extraction Method: Principal Component Analysis.

a. 1 components extracted.

Appendix D

Hypothesis Testing for Independent T-Testing

$H1_0$: Males and females do not differ on perceptions of turnover intentions

$H1_a$: Males and females differ on perceptions of turnover intentions

Table: Group Statistics

	Part V (Demographics)	N	Mean	Std. Deviation	Std. Error Mean
Turnover_Intentions	0	42	3.98	1.428	.220
	dimension1 1	41	4.17	1.481	.231

Table: Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Turnover_Intentions	Equal variances assumed	121	.729	-.577	81	.566	-.184	.319	-.820	.451
	Equal variances not assumed			-.577	80.700	.566	-.184	.320	-.820	.452

Males do not differ significantly (M=3.98, SD=1.43) from females (M=4.17,SD=1.48; t(81)=-0.58, p>0.05) on perceptions of turnover intentions.

$H2_0$: CE Officers who have never deployed and CE Officers who have deployed do not differ on perceptions of turnover intentions

$H2_a$: CE Officers who have never deployed and CE Officers who have deployed differ on perceptions of turnover intentions

Table: Group Statistics

	Deployed	N	Mean	Std. Deviation	Std. Error Mean
Turnover_Intentions	0	103	4.09	1.243	.122
dimension1	1	106	3.93	1.571	.153

Table: Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Turnover_Intentions	Equal variances assumed	4.651	.032	.837	207	.403	.164	.196	-.223	.551
	Equal variances not assumed			.840	198.903	.402	.164	.196	-.221	.550

CE Officers who have never deployed do not differ significantly (M=4.09, SD=1.24) from CE Officers who have deployed (M=3.93, SD=1.57; t(198.9)=-0.84, p>0.05) on perceptions of turnover intentions.

$H3_0$: CE Officers who have deployed less than three times and CE Officers who have deployed three or more times do not differ on perceptions of turnover intentions

$H3_a$: CE Officers who have deployed less than three times and CE Officers who have deployed three or more times differ on perceptions of turnover intentions

Table: Group Statistics

	Deployer	N	Mean	Std. Deviation	Std. Error Mean
Turnover_Intentions	dimension1 0	56	3.91	1.713	.229
	1	56	3.76	1.456	.195

Table: Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Turnover_Intentions	Equal variances assumed	1.554	.215	.501	110	.617	.151	.300	-.445	.746
	Equal variances not assumed			.501	107.205	.617	.151	.300	-.445	.746

CE Officers who have deployed less than three times do not differ significantly (M=3.91, SD=1.71) from CE Officers who have deployed three or more times (M=3.76, SD=1.46; t(110)=0.50, p>0.05) on perceptions of turnover intentions.

$H4_0$: CE Officers who have deployed less than or more than one time and CE Officers who have deployed one time do not differ on perceptions of turnover intentions

$H4_a$: CE Officers who have deployed less than or more than one time and CE Officers who have deployed one time differ on perceptions of turnover intentions

Table: Group Statistics

Deploy		N	Mean	Std. Deviation	Std. Error Mean
Turnover_Intentions	dimension1 0	129	3.83	1.346	.119
	dimension1 1	130	4.01	1.610	.141

Table: Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Turnover_Intentions	Equal variances assumed	3.785	.053	-1.020	257	.309	-.188	.184	-.551	.175
	Equal variances not assumed			-1.021	249.829	.308	-.188	.184	-.551	.175

CE Officers who have deployed less than or more than one time do not differ significantly (M=3.83, SD=1.35) from CE Officers who have deployed one time (M=4.01, SD=1.61; t(249.83)=-1.02, p>0.05) on perceptions of turnover intentions.

$H5_0$: CE Officers who have deployed less than or more than two times and CE Officers who have deployed two times do not differ on perceptions of turnover intentions

$H5_a$: CE Officers who have deployed less than or more than two times and CE Officers who have deployed two times differ on perceptions of turnover intentions

Table: Group Statistics

	Deploy	N	Mean	Std. Deviation	Std. Error Mean
Turnover_Intentions	dimension1 0	66	4.08	1.555	.191
	1	66	3.71	1.424	.175

Table: Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Turnover_Intentions	Equal variances assumed	.918	.340	1.451	130	.149	.377	.260	-.137	.890
	Equal variances not assumed			1.451	129.001	.149	.377	.260	-.137	.890

CE Officers who have deployed less than or more than two times do not differ significantly (M=4.08, SD=1.56) from CE Officers who have deployed two times (M=3.71, SD=1.42; t(130)=1.45, p>0.05) on perceptions of turnover intentions.

$H6_0$: CE Officers who have deployed less than or more than three times and CE Officers who have deployed three times do not differ on perceptions of turnover intentions

$H6_a$: CE Officers who have deployed less than or more than three times and CE Officers who have deployed three times differ on perceptions of turnover intentions

Table: Group Statistics

	Deploy	N	Mean	Std. Deviation	Std. Error Mean
Turnover_Intentions	dimension1 0	35	4.06	1.383	.234
	dimension1 1	35	3.84	1.403	.237

Table: Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Turnover_Intentions	Equal variances assumed	.086	.771	.674	68	.503	.224	.333	-.440	.889
	Equal variances not assumed			.674	67.987	.503	.224	.333	-.440	.889

CE Officers who have deployed less than or more than three times do not differ significantly (M=4.06, SD=1.38) from CE Officers who have deployed three times (M=3.84, SD=1.40; t(68)=0.67, p>0.05) on perceptions of turnover intentions.

$H7_0$: CE Officers who are single and CE Officers who are married do not differ on perceptions of turnover intentions

$H7_a$: CE Officers who are single and CE Officers who are married differ on perceptions of turnover intentions

Table: Group Statistics

P5Q6		N	Mean	Std. Deviation	Std. Error Mean
Turnover_Intentions	1	147	4.17	1.210	.100
	2	148	3.70	1.568	.129

Table: Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Turnover_Intentions	Equal variances assumed	10.233	.002	2.882	293	.004	.470	.163	.149	.791
	Equal variances not assumed			2.885	276.216	.004	.470	.163	.149	.791

CE Officers who are single differ significantly (M=4.17, SD=1.21) from CE Officers who are married (M=3.70, SD=1.57; t(276.22)=2.89, p<0.01) on perceptions of turnover intentions.

$H8_0$: CE Officers who are below the age of 30 and CE Officers who are 30 years old or older do not differ on perceptions of turnover intentions

$H8_a$: CE Officers who are below the age of 30 and CE Officers who are 30 years old or older differ on perceptions of turnover intentions

Table: Group Statistics

	Age	N	Mean	Std. Deviation	Std. Error Mean
Turnover_Intentions	0	98	4.13	1.368	.138
	1	100	3.53	1.500	.150

Table: Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Turnover_Intentions	Equal variances assumed	1.305	.255	2.973	196	.003	.607	.204	.204	1.010
	Equal variances not assumed			2.976	195.009	.003	.607	.204	.205	1.009

CE Officers who are below the age of 30 differ significantly (M=4.13, SD=1.37) from CE Officers who are 30 years old or older (M=3.53, SD=1.50; $t(196)=2.97$, $p<0.01$) on perceptions of turnover intentions.

$H9_0$: CE Officers who have their PE and CE Officers who do not have their PE do not differ on perceptions of turnover intentions

$H9_a$: CE Officers who have their PE and CE Officers who do not have their PE differ on perceptions of turnover intentions

Table: Group Statistics

P5Q11		N	Mean	Std. Deviation	Std. Error Mean
Turnover_Intentions	dimension1 0	13	3.58	1.401	.389
	dimension1 1	13	4.01	1.747	.485

Table: Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Turnover_Intentions	Equal variances assumed	1.212	.282	-.690	24	.497	-.429	.621	-1.711	.854
	Equal variances not assumed			-.690	22.921	.497	-.429	.621	-1.714	.857

CE Officers who have their PE do not differ significantly (M=4.01, SD=1.75) from CE Officers who do not have their PE (M=3.58, SD=1.40; t(24)=-0.69, p>0.05) on perceptions of turnover intentions.

Appendix E

Quality Criteria for Path Model

Table: SmartPLS Path Model Overview

Overview of Model						
	AVE	Composite Reliability	R Square	Cronbachs Alpha	Communality	Redundancy
Economic	0.3633	0.8495	0	0.8665	0.3633	0
Interrole Conflict	0.5092	0.8562	0	0.811	0.5092	0
Job Satisfaction	0.3668	0.8369	0.4134	0.7855	0.3668	0.0696
Life Domain	0.8915	0.9609	0	0.9394	0.8915	0
Ops Tempo	0.7662	0.8667	0	0.7223	0.7662	0
Organizational Commitment	0.4154	0.8576	0.3479	0.8201	0.4154	0.0422
POS	0.7037	0.9223	0	0.8946	0.7037	0
Turnover Intentions	0.7958	0.9212	0.2982	0.8718	0.7958	0.1167

Table: Path Model Total Effects

	Economic	Interrole Conflict	Job Satisfaction	Life Domain	Ops Tempo	Organizational Commitment	POS	Turnover Intentions
Economic	0	0	-0.2895	0	0	-0.1743	0	0.1415
Interrole Conflict	0	0	-0.0855	0	0	0	0	0.0217
Job Satisfaction	0	0	0	0	0	0	0	-0.2534
Life Domain	0	0	0.1704	0	0	0	0	-0.0432
Ops Tempo	0	0	0.0592	0	0	0.0279	0	-0.0259
Organizational Commitment	0	0	0	0	0	0	0	-0.3908
POS	0	0	0.3743	0	0	0.4885	0	-0.2857
Turnover Intentions	0	0	0	0	0	0	0	0

Table: Outer Model T-Statistic

	Availability of Alternative (Economic)	Interrole Conflict	Job Satisfaction	Life Domain	Ops Tempo	Organizational Commitment	POS	Turnover Intention
PartIVCareer Opportunities ampIntentions _P4Q1_1V	13.49							
P4Q4_1V	14.54							
P4Q5_1V	15.76							
P4Q6_1V	128.23							
P4Q7_1V	78.92							
P4Q8_1V	134.30							
P4Q9_1V	20.13							
P4Q10_1V	19.13							
P4Q11_1V	13.25							
P4Q12_1V	29.18							
P4Q13_1V	57.55							
P1Q14_1V		55.36						
P1Q16_1V		60.38						
P1Q18_1V		55.77						
P1Q19_1V		22.92						
P1Q21_1V		14.74						
P1Q23_1V		16.74						
PartIJobAttitudes_P1Q1_1V			32.04					
RP1Q2_1V			33.48					
RP1Q4_1V			33.99					
P1Q5_1V			40.31					
RP1Q7_1V			43.90					
P1Q11_1V			45.19					
P1_NWG_Q2_1V			56.76					
P1_NWG_Q3_1V			64.13					
P1_NWG_Q4_1V			70.10					
P5_LD_Q5_1V				443.71				

P5_LD_Q6_1V				100.49				
P5_LD_Q7_1V				701.47				
P3Q10_1V					187.54			
P3Q7_1V					51.28			
P2Q5_CE_1V						115.22		
P2Q6_CE_1V						28.26		
P2Q8_CE_1V						69.69		
P2Q9_CE_1V						30.81		
P2Q14_CE_1V						96.32		
P2Q15_CE_1V						12.04		
RP2Q16_CE_1V						89.57		
P2Q19_CE_1V						86.80		
RP2Q21_CE_1V						56.58		
P2Q24_CE_1V							134.66	
P2Q27_CE_1V							181.36	
P2Q29_CE_1V							149.53	
RP2Q30_CE_1V							123.29	
P2Q32_CE_1V							150.68	
P4Q19_1V								263.44
P4Q21_1V								264.44
RP4Q24_1V								190.38

Table: Model Cross Loadings 1

	Availability of Alternative (Economic)	Interrole Conflict	Job Satisfaction	Life Domain	Ops Tempo	Organizational Commitment	POS	Turnover Intention
PartIVCareer Opportunities ampIntentions _P4Q1_1V (P≤0.001)	**0.372**	0.1419	0.0105	0.0618	0.0197	-0.0654	0.0796	0.0214
P4Q4_1V (P≤0.001)	**0.3878**	0.0835	0.0214	0.0784	0.0367	-0.0567	0.0315	-0.0496
P4Q5_1V (P≤0.001)	**0.4379**	0.1245	-0.0273	0.0719	-0.0442	-0.0448	0.0428	0.0077
P4Q6_1V (P≤0.001)	**0.8607**	0.1874	-0.4261	-0.0137	-0.2589	-0.3565	-0.3786	0.4386
P4Q7_1V (P≤0.001)	**0.8313**	0.1468	-0.4412	-0.0221	-0.2788	-0.3719	-0.3302	0.451
P4Q8_1V (P≤0.001)	**0.867**	0.2638	-0.4252	0.0325	-0.2308	-0.3688	-0.4023	0.4896
P4Q9_1V (P≤0.001)	**0.4993**	0.1617	-0.1513	-0.0289	-0.0614	-0.1154	-0.0781	0.1255
P4Q10_1V (P≤0.001)	**0.482**	0.1902	-0.1535	-0.0105	-0.0561	-0.0661	-0.0851	0.0795
P4Q11_1V (P≤0.001)	**0.3588**	0.1324	-0.0377	0.0013	-0.0446	-0.0396	0.0018	-0.0177
P4Q12_1V (P≤0.001)	**0.5158**	0.2508	-0.2053	-0.0007	-0.0699	-0.0896	-0.1286	0.1776
P4Q13_1V (P≤0.001)	**0.6747**	0.205	-0.3764	-0.0337	-0.1981	-0.2327	-0.3315	0.4241
P1Q14_1V (P≤0.001)	0.255	**0.8365**	-0.1506	0.1216	-0.0589	-0.0399	-0.1521	0.0409
P1Q16_1V (P≤0.001)	0.2753	**0.8607**	-0.2162	0.1354	-0.1017	-0.0201	-0.1831	0.078
P1Q18_1V (P≤0.001)	0.2562	**0.829**	-0.1843	0.1365	-0.0756	-0.0354	-0.1536	0.0371
P1Q19_1V (P≤0.001)	0.1195	**0.6222**	-0.1258	0.1615	-0.0159	0.0218	-0.0873	-0.0079
P1Q21_1V (P≤0.001)	0.0549	**0.4888**	-0.0555	0.0201	-0.0696	-0.0049	-0.1005	0.0298

P1Q23_1V (P≤0.001)	0.0641	**0.5491**	-0.1129	0.0518	-0.0441	0.0561	-0.1234	0.0577
PartIJobAttitudes_P1Q1_1V (P≤0.001)	-0.4305	-0.3054	**0.5285**	0.1078	0.1661	0.1726	0.2181	-0.1624
RP1Q2_1V (P≤0.001)	-0.1526	-0.0162	**0.5179**	0.1179	0.1003	0.1325	0.2471	-0.1701
RP1Q4_1V (P≤0.001)	-0.2399	-0.2748	**0.509**	0.1237	0.1696	0.0765	0.2206	-0.1313
P1Q5_1V (P≤0.001)	-0.191	-0.1056	**0.5501**	0.1047	0.1402	0.2229	0.3739	-0.2136
RP1Q7_1V (P≤0.001)	-0.3828	-0.3105	**0.6186**	0.1266	0.2065	0.1956	0.2612	-0.217
P1Q11_1V (P≤0.001)	-0.2403	-0.0948	**0.5936**	0.1446	0.1467	0.1837	0.3248	-0.206
P1_NWG_Q2_1V (P≤0.001)	-0.2748	-0.0524	**0.6786**	0.1123	0.1962	0.2989	0.3921	-0.3313
P1_NWG_Q3_1V (P≤0.001)	-0.311	-0.0006	**0.6921**	0.1928	0.2225	0.4102	0.4405	-0.3671
P1_NWG_Q4_1V (P≤0.001)	-0.3402	-0.0837	**0.7194**	0.1323	0.1998	0.3947	0.4099	-0.3523
P5_LD_Q5_1V (P≤0.001)	-0.0012	0.1549	0.2124	**0.9737**	0.1615	0.0789	0.1075	-0.1278
P5_LD_Q6_1V (P≤0.001)	0.0062	0.1627	0.1515	**0.8763**	0.194	0.04	0.1168	-0.1357
P5_LD_Q7_1V (P≤0.001)	-0.0232	0.1382	0.2304	**0.9791**	0.1808	0.0751	0.1131	-0.1289
P3Q7_1V (P≤0.001)	-0.166	-0.0531	0.1877	0.1874	**0.7922**	0.0822	0.1951	-0.1528
P3Q10_1V (P≤0.001)	-0.2794	-0.0921	0.2967	0.1572	**0.9512**	0.2597	0.3112	-0.2622
P2Q5_CE_1V (P≤0.001)	-0.3393	-0.0639	0.2758	0.0068	0.1524	**0.7586**	0.3793	-0.4606
P2Q6_CE_1V (P≤0.001)	-0.3013	-0.0995	0.1171	0.0052	0.0527	**0.4873**	0.1809	-0.2379

P2Q8_CE_1V (P≤0.001)	-0.2368	0.0708	0.149	-0.0334	0.1234	**0.6855**	0.2952	-0.2949
P2Q9_CE_1V (P≤0.001)	-0.2181	-0.0348	0.16	-0.0136	0.0674	**0.5205**	0.2151	-0.2338
P2Q14_CE_1 V (P≤0.001)	-0.2627	-0.0121	0.2117	-0.04	0.1242	**0.7741**	0.34	-0.3742
P2Q15_CE_1 V (P≤0.001)	-0.1585	0.0223	-0.0147	-0.0166	0.0294	**0.2793**	0.0056	-0.1093
RP2Q16_CE_ 1V (P≤0.001)	-0.266	0.0099	0.3514	0.0582	0.2079	**0.7151**	0.4679	-0.3454
P2Q19_CE_1 V (P≤0.001)	-0.2088	0.0676	0.4168	0.1868	0.2481	**0.7394**	0.514	-0.363
RP2Q21_CE_ 1V (P≤0.001)	-0.2149	-0.0421	0.4267	0.1439	0.1617	**0.6702**	0.5478	-0.3152
P2Q24_CE_1 V (P≤0.001)	-0.2633	-0.1466	0.407	0.1482	0.2372	0.5126	**0.8156**	-0.3816
P2Q27_CE_1 V (P≤0.001)	-0.3101	-0.2312	0.4385	0.0851	0.2249	0.4831	**0.8635**	-0.3412
P2Q29_CE_1 V (P≤0.001)	-0.3786	-0.1503	0.4715	0.1012	0.2531	0.4836	**0.846**	-0.3814
RP2Q30_CE_ 1V (P≤0.001)	-0.3181	-0.1799	0.4334	0.0706	0.2651	0.4307	**0.8413**	-0.3116
P2Q32_CE_1 V (P≤0.001)	-0.3799	-0.1015	0.5203	0.0877	0.2894	0.4601	**0.827**	-0.3687
P4Q19_1V (P≤0.001)	0.4633	0.0476	-0.3696	-0.1198	-0.2357	-0.4009	-0.3681	**0.9053**
P4Q21_1V (P≤0.001)	0.4974	0.0698	-0.4194	-0.15	-0.2567	-0.3834	-0.3524	**0.9075**
RP4Q24_1V (P≤0.001)	0.3793	0.0404	-0.3224	-0.099	-0.1836	-0.5263	-0.4149	**0.8627**

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Vita

Captain Joshua D. Connell graduated from Withrow High School in Cincinnati, OH in June 1993. In July 1994, he enlisted in the United States Navy. In September of 1994, he was assigned to the USS Essex (LHD-2), home ported in San Diego, CA. While in the Navy, he deployed in support of the Gulf War, Operation United Shield in Somalia, and Operation Southern Watch in the Persian Gulf. In June 1998, he left the Navy to pursue higher education. While in college, he served in the Maine Air National Guard. While in the Guard, he deployed in support of Operation Southern Watch, and Operation Noble Eagle. In May 2002, he graduated from the University of Maine with a Bachelor of Science Degree in Spatial Information Engineering. After graduation, he pursued a commission in the United States Air Force. In February 2003, he was commissioned through Officer Training School. Upon commissioning, he was assigned to the 16th Civil Engineer Squadron, Hurlburt Field AAF, FL. While at Hurlburt Field, he worked as a project programmer, the executive officer to the AFSOC/A7, and the disaster recovery maintenance engineer after hurricane Ivan. In May 2005, he was assigned to the 51st Fighter Wing, Osan AB, ROK, where he served as the deputy chief of combat readiness. In June 2006, he entered the Naval Explosive Ordnance Disposal School, Eglin AFB, FL. After completion of school in February 2007, he was assigned to the 4th Civil Engineer Squadron, Seymour Johnson AFB, NC. While at Seymour Johnson, he served as the Explosive Ordnance Disposal flight commander. During his tenure as an officer he has deployed twice to Iraq, and once to Afghanistan. He entered the Air Force Institute of Technology in August of 2010. Upon graduation, he will be assigned to Headquarters United States Air Force, Pentagon, Washington DC.

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14. ABSTRACT

A potential retention problem is facing company grade officers (CGOs) in the Air Force Civil Engineer (CE) career field. This is due to the stress caused by a demanding workload experienced during a prolonged period of conflict (Iraq and Afghanistan), which is compounded by a reduction in force. The possibility of reduced retention is thus a concern for CE leadership. Based on past research, and the prior study conducted by Riddel (2010), a new model of turnover intentions was developed. The new model expands on the simplified model of turnover (Riddel, 2010) and attempts to focus on key factors that may help explain what drives turnover intentions in the CE CGO community. Two proven methodologies, independent t-testing and structural equation modeling (SEM), were applied independently to first determine how subgroups in the population differ in perception of turnover intentions and next to determine the most important drivers of turnover intentions. The research found, through t-testing, that marital status and age (20s versus 30s) resulted in statistically significant differences in perceptions regarding turnover intentions. Perceived organizational support (POS) was found to be the most significant exogenous variable.

15. SUBJECT TERMS
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