

INSIDE LOGISTICS



EXPLORING THE HEART OF LOGISTICS

The Impact of OPTEMPO on Intentions to Depart the Air Force: Does the Increase of OPTEMPO Cause Action?

Nathan P. Olsen, Captain, USAF

Sharon Gibson Heilmann, PhD, Lieutenant Colonel, USAF

Introduction

Turnover, defined as the act of an employee leaving an organization, has assumed crisis proportions for many employers who struggle to retain people in their organization.¹ Because turnover costs can range from 93 percent to 200 percent of the leaver's annual salary, both public and private organizations are doing all they can to minimize the loss of their employees.² The military is not immune to the tremendous cost of turnover as the Government Accountability Office review reported approximately 62 percent of enlisted personnel and 40 percent of officers intend to leave the military once their active duty service commitments are complete.³ In 2007, the armed forces reduced their overall total force by over 8,000 members with a common explanation for leaving being the increase in military operations, commonly referred to as operations tempo (OPTEMPO).^{4,5} As the military downsizes, the OPTEMPO is likely to increase, thus there is a need to determine the effect of OPTEMPO on voluntary turnover.⁶

Previous studies on the impact of OPTEMPO on military turnover have generated inconsistent findings.⁷ Some findings have indicated a high OPTEMPO is consistent with a greater intention to leave,^{8,9} while other findings have noted the opposite effect.^{10,11} The intent of this study is to evaluate the effects of OPTEMPO on intent to turnover in the United States Air Force (USAF) using secondary data from the 2004 *Status of Forces Survey of Active Duty Members*.¹²

Review of Literature

Turnover in the military setting has been evaluated in much the same way as in the civilian sector. Military turnover studies have primarily focused on the systematic evaluations which are

determined by the individual's perceptions about the job.¹³ Although the research has been centered on the same areas, the military is faced with some unique differences. For example, military members do not have as much autonomy in career decisions as their civilian counterparts. Civilians are able to leave their profession generally at any time, while military members are required to fulfill their commitment before they are allowed to terminate their service in the military.¹⁴

Developments in the world have caused the US military to be deployed in a magnitude and duration never seen before. Not only has the military been involved in typical military operations, but it has also been involved in an increasing amount of peacekeeping and small-scale contingencies such as in Haiti in 1994 and Somalia in 1993.¹⁵ With the increase in military operations, the amount of time away from primary duty stations has dramatically increased. Military members are often away from their homes to attend military schools, train for war, conduct humanitarian aid, carry out peacekeeping missions, and take part in combat operations.¹⁶ In addition to deployments, military members often work more than 50 to 55 hours a week.¹⁷ With the increase in deployments and work hours, it is important to determine if the strain placed on the troops is a factor for increased turnover.

OPTEMPO is a relatively new construct that has not been evaluated extensively in regards to its influence on turnover. OPTEMPO has been defined in many different ways, but for the purpose of this study, the research will be based on the OPTEMPO definition provided by Huffman, Adler, Dolan, and Castro.¹⁸ OPTEMPO was considered a multifaceted construct that needed to reflect a military member's duties in garrison, training, and deployed environments.¹⁹ Huffman, et al., defined OPTEMPO as the rate of military operations as measured by deployments, training exercises, temporary duty (TDY) assignments, and work hours.

With all of the conflicting information about the effect of OPTEMPO on turnover, Huffman, et al. attempted to establish a consistent definition of OPTEMPO and determine its effect on turnover. The study team used the combined measures of deployments, training exercises, TDY assignments, and work hours as the definition of OPTEMPO.²⁰ They team believed a method of understanding OPTEMPO's effect on turnover was to use a consistent definition throughout all additional studies.

Article Acronyms

DMDC – Defense Manpower Data Center
E# – Enlisted (with Rank)
NCO – Noncommissioned Officer
O# – Officer (with Rank)
OPTEMPO – Operations Tempo
TDY – Temporary Duty

The common definition would help future researchers address possible explanations for the inconsistent data being reported in the area of OPTEMPO. The data used by the research team was collected from the US Army Europe from May 1999 to January 2001.²¹ The following three instruments were used to assess OPTEMPO and career intentions:²²

- An OPTEMPO survey (N=288)
- A career decision survey (N=288)
- An OPTEMPO interview (N=177)

The study provided evidence that role overload related to work hours was tightly linked with turnover, and that the relation between OPTEMPO and turnover is curvilinear.²³ Basically, a soldier who does not have high OPTEMPO is likely to depart the organization, while a soldier with too high OPTEMPO is also likely to leave the organization. Analysis of the study would suggest that it is important to find the ideal amount of OPTEMPO in order to avoid unwanted employee turnover. Most studies analyzed the OPTEMPO and turnover relationship as a simple linear association.²⁴ Recent research has shown the relationship is more complex and should be evaluated as a curvilinear relationship. A curvilinear relationship would suggest there is an optimal level of OPTEMPO which maintains unit readiness and maximizes an individual's intention to remain in the military.²⁵ A curvilinear relationship also suggests turnover intentions will increase when OPTEMPO levels are either very low or very high.

Hypothesis 1: The relationship between OPTEMPO and turnover intentions is curvilinear. At moderate levels, OPTEMPO measures will be associated with low turnover intentions. At both low and high levels of OPTEMPO, however, turnover intentions will be high.

Another aspect of employee and organizational linkages receiving considerable attention from managers and researchers is the topic of organizational commitment.²⁶ There are several reasons why organizational commitment has been studied so extensively, but one of the main reasons is that it has proven to be a fairly reliable predictor of behaviors such as turnover.²⁷ Overall, research has suggested that an employee's level of commitment has an effect on commitment-related phenomena such as turnover.²⁸ When an employee is considered to be committed to the organization, he is more likely to remain with the organization. Although organizational commitment has been an area of vital concern to the military, there have been very few organizational commitment studies conducted on military personnel.²⁹ The studies conducted in this area have been grounded in the idea that members' lack of job satisfaction and commitment are central to their decision to leave the military.³⁰ Because of the relationship between organizational commitment and employee retention, the military has been interested in the connection between these two variables. Generally, strongly committed employees are less likely to leave the military than weakly committed personnel.³¹ Hom and Hulin supported this belief by successfully predicting that organizational commitment affected reenlistment intentions and reenlistment behavior.³² Several other researchers supported the same correlation between organizational commitment and turnover intentions.^{33,34} Similar to many constructs, organizational

commitment is hard to define and is affected by numerous outside influences. For example, prior research has established a negative relationship between tenure, age, and organizational commitment.³⁵ It has been noted in some cases that experienced employees withdraw commitment to the organization and go through the motions until retirement.³⁶ Due to the influence between the moderating variables of age and tenure, it is important to take into consideration moderating variables when evaluating organizational commitment.

Previous research has indicated organizational commitment has a negative relationship with turnover intentions. As an individual increases in organizational commitment, his or her intentions to leave the organization decrease. The field of OPTEMPO has not addressed the impact organizational commitment has on OPTEMPO. Evaluating the effect organizational commitment has on the OPTEMPO and turnover relationship will help further necessary research.

Hypothesis 2: Organizational commitment will moderate the curvilinear relationship between OPTEMPO and turnover intentions such that increased organizational commitment will result in a decreased impact of OPTEMPO on turnover intentions.

Due to the great importance of job satisfaction to individuals and their well-being, job satisfaction has been studied since the 1930s.³⁷ A lack of job satisfaction can lead to many individual issues as well as organizational issues. On an organizational level, lower job satisfaction is linked with higher turnover rates in an organization.³⁸ There have been numerous theories and models proposed on the subject of job satisfaction. The majority of studies can be categorized into two fields: content theories and process theories.³⁹ Content theories focus on individual characteristics and experiences that control the behaviors of employees. Process theories focus on how behavior is initiated, directed, maintained, and terminated.⁴⁰ Due to the differences between the employment environments of civilians and the military, many studies have been conducted to compare levels of job satisfaction between the two.⁴¹ Generally, these studies have shown job satisfaction in the military is lower than job satisfaction in the civilian sector.⁴² It has been suggested that job satisfaction in the military may be unique because of the unique stressors and compensation associated with military work.⁴³ Some of the unique aspects of the military that were suggested as reasons for this difference are separation from family, friends, and a familiar environment; dangerous and unpleasant conditions; long and irregular hours; low pay; and frequent rotation. Overall, the difference in job satisfaction and the military can be attributed to the influence of the work environment on the individual.⁴⁴ As many of the suggested reasons for the lower levels of job satisfaction reported are also measures of OPTEMPO, the moderating relationship between the two variables will be tested.

Hypothesis 3: Job satisfaction will moderate the curvilinear relationship between OPTEMPO and turnover intentions such that increased job satisfaction will result in a decreased impact of OPTEMPO on turnover intentions.

Extensive research on the effect of gender and turnover has had inconclusive results. Hom and Griffeth⁴⁵ conducted a meta-

analysis of 15 studies that concluded that females were no more likely to leave any organization than males. Earlier research conducted by Cotton and Tuttle⁴⁶ concluded there is strong confidence in their meta-analysis that women are more likely to leave an organization than men. Cotton and Tuttle⁴⁷ did note that their research revealed fewer studies found gender differences than found no differences at all, and one study reported that males were more likely to leave than females. In more recent research Stroh, Brett, and Reilly⁴⁸ studied 488 male and 127 female managers who had been transferred by 20 *Fortune* 500 companies. The study found during a 2-year period, women were more likely to leave an organization than men.⁴⁹ In contrast, a study of US federal civil service found there were no gender differences in turnover.⁵⁰ An even more recent study by Lyness and Judiesch⁵¹ found that men were more likely to turn over than females. The recent studies show that there are still inconclusive results in the field of gender and turnover. Some researchers feel it is important to understand the relationship between gender and turnover in order to combat the statistical discrimination theory. The statistical discrimination theory states that employers' perceptions about groups, such as the perception that women resign more than men, can lead to discrimination against members of the group.⁵² The current research on OPTEMPO and turnover has not studied in depth the demographic of gender. Kelley, Hock, Bonney, Jarvis, Smith, and Gaffney⁵³ also addressed the issue of gender and turnover by evaluating whether deployment experiences of active duty Navy mothers caused them to leave the organization. No differences were reported between female members with children and females members without children as related to intentions to reenlist; however, satisfaction with the Navy did affect retention decisions. In order to fully understand the relationship gender has with OPTEMPO and turnover, it is important to study it more in depth.

Hypothesis 4: The relationship between OPTEMPO and turnover intentions is moderated by gender. Specifically, the curvilinear relationship between OPTEMPO and turnover intentions will decrease for males and increase for females.

Method

With the lack of consistent findings of OPTEMPO and turnover studies, this study attempted to replicate the findings of Huffman, et al., and further the research in the area of OPTEMPO and turnover. The study used the definition of OPTEMPO developed by Huffman, et al. which focuses on the measurement of deployments, training exercises, TDY assignments, and work hours. The study also followed the advice of Huffman, et al., and used a sample that is more representative of US military personnel. In addition to using a more representative population of military personnel, the data is more current and should better reflect attitudes of military personnel in the post-September 11, 2001 military, which has seen a dramatic increase in OPTEMPO. The data used for this study is secondary data obtained from the Defense Manpower Data Center (DMDC) August 2004 Status of Forces Survey. The survey focused on the personnel issues of overall satisfaction, retention intention, perceived readiness, stress, tempo, permanent change of station moves, the Global War on Terrorism, details on retention, deployments, assignments,

organizational commitment, satisfaction with aspects of military life, member's health, compensation, and tuition assistance programs.⁵⁴

Data for the August 2004 Status of Forces Survey were collected via an online 144-item questionnaire completed by randomly selected military members chosen from the DMDC Active Duty Master Edit File. The survey process began on 12 July 2004, when the DMDC mailed out notification letters to 38,112 military members selected to participate. The target population for the Status of Forces Survey consisted of all active duty members of the Army, Navy, Marine Corps, and Air Force.⁵⁵ The participants must have had at least 6 months of military service and been below flag rank.⁵⁶ In order to obtain a random sample of the population, the DMDC used single-stage, nonproportional stratified random sampling procedures.⁵⁷ All members of the population were categorized into homogenous groups based on available demographic variables. Of the 38,112 sample members, 13,396 completed surveys were returned to the DMDC. The sample for this study used consisted of the 2,171 Air Force members that responded to the survey. Every survey is subject to potential sources of bias.⁵⁸ The secondary data set from the DMDC survey was used to measure four variables and the individual characteristics of the survey respondents. The four variables used were OPTEMPO, career intentions, job satisfaction, and organizational commitment. The individual characteristics used from the secondary data were rank and gender.

OPTEMPO

OPTEMPO is a term defined in many ways, but for the purpose of this study it was evaluated based on the definition of Huffman, et al., OPTEMPO is the rate of military operations and was measured by deployments, training exercises, temporary duty (TDY) assignments, and work hours.⁵⁹ The relevance of OPTEMPO as a cause of turnover first emerged in the early 1990s when there was a decrease in military personnel and a dramatic increase in military operations.⁶⁰ Members who took the survey reported on number of deployments, number of nights away from permanent duty station because of military duties in the past 12 months, and the number of days worked longer than a normal duty day in the past 12 months. The number of nights an individual was away from their permanent duty station because of military duties in the past 12 months was measured in survey item number 29 ($n = 2,150$, $M = 2.34$, and $SD = 1.12$). The number of nights an individual was away from their permanent duty station because of military duties in the past 12 months provided information on the number of days the member has been deployed, taken part in training exercises, and been given TDY assignments. The final measure of OPTEMPO, work hours was measured by survey item 28 ($n = 2,141$, $M = 4.28$, and $SD = 1.64$). The number of days an individual worked longer than a normal duty day in the past 12 months was added to the number of nights away from the member's permanent duty station because of military duties in the past 12 months to determine the OPTEMPO of the military member. The use of the member's reported information on their estimated workload can be a trusted reporting measure because studies have shown that perceived workload correlates reliably enough with archival records.⁶¹ The reported coefficient alpha for the composite OPTEMPO scale for this sample was .48 ($n = 2,141$).

Career Intentions

A military member's decision to remain in the military will be the result of the perceived balance between personal cost of workload and the personal benefit of their OPTEMPO.⁶² Once a military member has decided that the levels of OPTEMPO experienced are no longer worth remaining in the military, they may begin to have feelings that cause them to lean toward leaving the organization. The data provided on career intentions is considered reliable because a positive relation exists between stated career intentions and actual behavior (for example, 95.7 percent of the soldiers in the study who stated that they intended to stay did indeed stay, whereas only 59 percent of the soldiers who stated they intended to leave military service actually did leave).⁶³ According to the work of Mobley, intent to stay with the organization has been the closest explanation for turnover in the causal chain.^{64,65} When scholars choose to study turnover, they tend to focus on the intent to stay because its relationship with turnover is moderately strong with a Pearson $r = .50$.⁶⁶ The career intentions of the survey respondents were measured in item 23 ($n = 2,167$, $M = 3.70$, and $SD = 1.30$). Item 23 asked the respondents to comment on whether or not they would stay on active duty if they were required to make a decision on it. The participants were required to answer the question on a scale with *very likely* as the highest possible answer, and *very unlikely* as the lowest possible answer. For the purposes of this research, a single-item measure was used to determine the career intentions of military members. The use of single-item measures is often discouraged in scholarly research, but recently work on single-item measures has challenged the skeptics.⁶⁷ Gardner, Cummings, Dunham, and Pierce⁶⁸ attacked the criticisms of single-item measures with the argument that one *good* item can be better than many *bad* items.⁶⁹ Wanous and Hudy concluded single-item measures have an estimated reliability of .82 for group-level data and a reliability of .7 for individual level data.⁷⁰ Generalizing from these results, it is possible to hypothesize that single-item measures might be better than multiple measures in some cases.⁷¹ Studies have also shown that single-item measures provide a way for researchers to address methods variance concerns.

Job Satisfaction

Military personnel who report a higher level of job satisfaction are more likely to stay or indicate an intention to stay in the military.⁷² By understanding the effect of job satisfaction on turnover, it may be possible to take steps to ensure the military retains valuable service members.⁷³ Job satisfaction was measured in the survey using a single-item measure in question 21 ($n = 2,171$, $M = 3.76$, and $SD = .93$). Respondents were asked to determine how satisfied they were with the military way of life. They answered based on a 5-point scale anchored by *very satisfied* and *very dissatisfied*.

Organizational Commitment

The military is striving to develop more committed service members and families so they are more likely to stay in the military.⁷⁴ As the service members' commitment grows, they are less likely to be absent from their jobs and leave the military.⁷⁵ The respondents' perceived level of organizational commitment to the military was measured in multiple ways. Respondents were asked to state how much they agreed with a list of statements on organizational commitment using a 5-point scale anchored by

strongly agree (5) and the lowest score corresponding to an answer of *strongly disagree* (1). An example of the statements the individual was asked to remark on is, "I would not leave the military right now because I have a sense of obligation to the people in it." The coefficient alpha for the study was .89.

Gender

The current research lacks information on the effect of the demographic of gender on OPTEMPO and turnover. Price and Kim⁷⁶ found that, in general, men intend to stay in the Air Force less often than women.⁷⁷ Respondents were asked to indicate their gender ($n = 2,208$: Male [$n = 1,196$]; Female [$n = 1,012$]).

Results

The complexity of the model studied required the hypotheses to be evaluated using multiple regression to assess the variance OPTEMPO explains with regard to intent to leave. Multiple regression analyses were also used to evaluate whether or not organizational commitment, job satisfaction, rank, and gender moderated the influence of OPTEMPO on intent to turnover.

The descriptive and correlation analysis of the independent and dependent variables resulted in evidence that job satisfaction and organizational commitment were correlated to turnover intentions. Job satisfaction and organizational commitment were negatively related to turnover intentions ($r = -.57$ and $-.62$, $p < .001$, respectively). For the purpose of this study, organizational commitment and job satisfaction were evaluated as moderators in the OPTEMPO turnover model.

OPTEMPO and rank were moderately correlated ($r = .34$, $p < .001$). These two variables were expected to be correlated because as military members increase in rank, their scope of responsibility increases. With an increase in responsibility comes increased time at work, which would increase the OPTEMPO of higher ranking military members. In a study on OPTEMPO conducted by Huffman, et al., the work hours per day increased from 11.1 hours per day for junior enlisted to 11.9 hours per day for noncommissioned officers (NCO), and 12.9 hours per day for officers. A similar trend was evident with days worked per week with junior enlisted working 5.2 days per week, senior NCOs working 5.6 days per week, and officers working 6.0 days per week.⁷⁸ Similar support was found for the negative correlation between gender and OPTEMPO ($r = -.17$, $p < .001$), which is understandable because the assignment of deployments, TDYs, and work hours in the military are not dependent on the individual's gender. All OPTEMPO-related measures are theoretically assigned equally between men and women. An alternate explanation of the negative correlation is that women are not generally assigned to combat units, and the type of unit often determines the levels of OPTEMPO experienced.⁷⁹

Hypothesis 1 tested whether OPTEMPO would have a curvilinear relationship with turnover intentions such that individuals with low OPTEMPO would have a high turnover intention and individuals with high OPTEMPO would have a high turnover intention. To test this hypothesis, one step-wise regression was computed with the control variables rank and gender placed in separate blocks. The subsequent blocks of the regression were comprised of the remaining variables and were entered in the following order: job satisfaction, organizational commitment, OPTEMPO and OPTEMPO². (Note: OPTEMPO² was created by squaring the term causing the term to be a curved

shape, and if the regression also had a curved shape it would mean that OPTEMPO was curvilinear). Use of the step-wise method allowed for the individual assessment of the relationship between OPTEMPO and turnover intentions. The first step in the regression analysis was to evaluate the change in R^2 to determine the amount of incremental variance accounted for by the independent variables. Additionally, the significant change in F-values was evaluated to determine if the independent variables had a significant influence on the dependent variable turnover intentions. The variance accounted for by each of the independent variables was significant, except for OPTEMPO and OPTEMPO^2 (rank $\Delta R^2 = .05$, $p < .001$, $\Delta F = 28.19$; gender $\Delta R^2 = .00$, $p < .001$, $\Delta F = 7.76$; job satisfaction $\Delta R^2 = .29$, $p < .001$, $\Delta F = 906.29$; organizational commitment $\Delta R^2 = .13$, $p < .001$, $\Delta F = 513.29$). Model 1 produced an overall $R^2 = .48$ and an adjusted $R^2 = .47$ which accounted for the total variance due to the independent variables of gender, job satisfaction, organizational commitment, OPTEMPO, and OPTEMPO^2 . In Model 1 gender ($\beta = .05$, $p = .00$), job satisfaction ($\beta = -.29$, $p = .00$), and organizational commitment ($\beta = -.44$, $p = .00$) were significantly related to turnover intentions. Because there was no statistical significance associated with the OPTEMPO and the OPTEMPO^2 variables, the results did not support the presence of a curvilinear relationship between OPTEMPO and turnover intentions. In summation, the data did not support Hypothesis 1, and there was no curvilinear or linear relationship between OPTEMPO and turnover intentions.

Hypothesis 2 was assessed in model 2. The test of Hypothesis 2 examined the negative moderating effect of organizational commitment on the relationship between OPTEMPO and turnover intentions. To test this hypothesis, one regression was computed with the control variables rank and gender. The subsequent blocks of the regression were comprised of the remaining independent variables and were entered in the following order: job satisfaction, organizational commitment, OPTEMPO, OPTEMPO^2 , OPTEMPO X organizational commitment, and OPTEMPO^2 X organizational commitment. The step-wise method of entering the variables allowed for the analysis of the possible moderating effects of job satisfaction on the relationship between OPTEMPO and turnover intentions. The standardized regression coefficient and the significant change in F-values for the moderating variable organizational commitment were evaluated to determine if there was a significant influence on turnover intentions. Model 2 produced an $R^2 = .48$ and an adjusted $R^2 = .47$. In Model 2, gender ($\beta = .05$, $p = .00$), job satisfaction ($\beta = -.29$, $p = .00$), and organizational commitment ($\beta = -.55$; $p = .00$) were significantly related to turnover intentions. The results of the linear regression indicated there was no significant relationship between the moderating variable of organizational commitment and the relationship between OPTEMPO and turnover intentions. The standardized regression coefficient and change in F were not found to be significant for the moderating variable, organizational commitment ($\beta = -.05$, $p > .1$). Therefore, the results provided no support for Hypothesis 2. There was no moderating relationship between organizational commitment and the relationship between OPTEMPO and Turnover Intentions.

In order to test Hypothesis 3, a new independent variable comprised of the product of job satisfaction and OPTEMPO was created. Hypothesis 3 was assessed in model 3. The test of

Hypothesis 3 examined the negative moderating effect of job satisfaction on the relationship between OPTEMPO and Turnover Intentions. To test this hypothesis, one regression was computed with the control variables, rank and gender. The subsequent blocks of the regression were comprised of the remaining independent variables and were entered in the following order: job satisfaction, organizational commitment, OPTEMPO, OPTEMPO^2 , OPTEMPO X job satisfaction, and OPTEMPO^2 X job satisfaction. The step-wise method of entering the variables allowed for the analysis of the possible moderating effects of job satisfaction on the relationship between OPTEMPO and Turnover Intentions. The standardized regression coefficient and the significant change in F-values for the moderating term were evaluated to determine if there was a significant influence on Turnover Intentions. Model 3 produced an $R^2 = .48$ and an adjusted $R^2 = .47$. In Model 3, gender ($\beta = .05$, $p = .00$), job satisfaction ($\beta = -.28$, $p = .00$), and organizational commitment ($\beta = -.44$, $p = .00$) were significantly related to Turnover Intentions. The standardized regression coefficient and change in F were not found to be significant for the moderating variable job satisfaction ($\beta = .03$, $p > .1$). The results provided no support for Hypothesis 3.

Hypothesis 4 was assessed in model 4. The test of Hypothesis 4 examined the negative moderating effect of gender on the relationship between OPTEMPO and turnover intentions. To test this hypothesis, one regression was computed with the control variables rank and gender. The subsequent blocks of the regression were comprised of the remaining independent variables and were entered in the following order: job satisfaction, organizational commitment, OPTEMPO, OPTEMPO^2 , OPTEMPO X gender, and OPTEMPO^2 X gender. The step-wise method of entering the variables allowed for the analysis of the possible moderating effects of job satisfaction on the relationship between OPTEMPO and Turnover Intentions. The standardized regression coefficient and the significant change in F-values for the moderating term gender were evaluated to determine if there was a significant influence on Turnover Intentions. Model 4 produced an $R^2 = .48$ and an adjusted $R^2 = .47$. In Model 4, job satisfaction ($\beta = -.29$, $p = .00$) and organizational commitment ($\beta = -.44$, $p = .00$) were significantly related to Turnover Intentions. The standardized regression coefficient and change in F were not found to be significant for the moderating variable gender ($\beta = .02$, $p > .1$). Therefore, the results provided no support for Hypothesis 4. There was no moderating relationship between gender and the relationship between OPTEMPO and Turnover Intentions.

The analysis of the data indicated that none of the research hypotheses were supported, which leads to an additional question, does OPTEMPO have a significant relationship with Turnover Intentions when job satisfaction and organizational commitment are not present? In order to test this additional research question, two models were tested to examine the relationship between OPTEMPO and Turnover Intentions and OPTEMPO^2 and Turnover Intentions without the presence of job satisfaction and organizational commitment. To test this additional research question, two regressions were computed with the control variables, rank and gender. The subsequent blocks of the regression were comprised of OPTEMPO for the first regression and OPTEMPO and OPTEMPO^2 for the second regression. The standardized regression coefficient and the

significant change in F-values OPTEMPO and OPTEMPO² were evaluated to determine if there was a significant influence on Turnover Intentions. Model 6 produced an $R^2 = .06$ and an adjusted $R^2 = .06$. In Model 5, OPTEMPO ($\beta = .07, p = .00$) was significantly related to Turnover Intentions. Therefore, the linear regression indicated there was a significant relationship between OPTEMPO and Turnover Intentions. Although there is a significant relationship, the low R^2 value suggested the amount of variance explained by the model was very low. There are additional constructs that influenced an individual's turnover intention. Model 7 produced an $R^2 = .06$ and an adjusted $R^2 = .06$. In Model 6, OPTEMPO ($\beta = .12, p > .05$) and OPTEMPO² ($\beta = -.05, p > .05$) were not significantly related to Turnover Intentions. Therefore, the linear regression indicated there is not a significant relationship between OPTEMPO² and Turnover Intentions. The results are inconsistent with the results provided by Huffman, et al. which reported a curvilinear relationship existed between OPTEMPO and Turnover Intentions.

Discussion

The principal finding is that OPTEMPO does not have a significant curvilinear relationship with Turnover Intentions when accounting for job satisfaction and organizational commitment. Therefore, there is no evidence supporting the idea that individuals with low OPTEMPO will have a high Turnover Intention and individuals with high OPTEMPO will have a high Turnover Intention. This finding is in contrast to the finding reported by Huffman, et al., who suggested the relation between OPTEMPO and Turnover Intentions might be curvilinear.⁸⁰ Further findings indicated there is no significant relationship between OPTEMPO and Turnover Intentions when accounting for job satisfaction and organizational commitment. These findings are consistent with the findings of Castro, et al.⁸¹ and Reed and Segal⁸² who found OPTEMPO either to be related to a soldier's intentions to stay in the military or had no effect at all. It is possible that the results of this study are caused by military members self-selecting into the military because they desire to have an occupation with high OPTEMPO. Individuals joining the military know deployments, TDYs, training exercises, and long work hours will be part of the occupation. These individuals feel high OPTEMPO is a positive aspect of the job and are willing to accept the consequences of a high OPTEMPO occupation. Individuals who have positive feelings about OPTEMPO are not likely to leave the military when OPTEMPO increases. The second key finding of the study was that job satisfaction and organizational commitment did not have a moderating effect on the relationship between OPTEMPO and Turnover Intentions. This result supports the evidence that there appeared to be no relationship between OPTEMPO and Turnover Intentions when accounting for job satisfaction and organizational commitment. Results did support the relationship organizational commitment and job satisfaction have on turnover, and because of this, these variables would be expected to have an influence on the independent variable of OPTEMPO and its effect on turnover. Support for this finding is found in the significantly negative relationship between job satisfaction, organizational commitment and Turnover Intentions ($r = -.57$ and $-.62, p < .001$, respectively). Namely, as job satisfaction and organizational commitment increased, Turnover Intentions significantly decreased.

The third key finding of the study was that rank and gender did not have a moderating effect on the relationship between OPTEMPO and Turnover Intentions when accounting for job satisfaction and organizational commitment. The data did not support prior research which had shown junior enlisted members were more likely to report they intend to leave the service than NCOs and officers.⁸³ It, in fact, suggested the opposite, as rank increased, it did not significantly decrease the likelihood of turnover. This demonstrates that rank does not play a role in determining the relationship between OPTEMPO and turnover. Although the data did not show an effect on turnover, it did demonstrate an increase in OPTEMPO as individuals increased in rank. E1 to E4s in the Air Force experienced an OPTEMPO level of 5.57, while O4 to O6s experienced an OPTEMPO level of 7.56. This increase in OPTEMPO did not increase an individual's intent to turnover. Prior research had demonstrated inconsistent results on the effect of gender on turnover. This research demonstrates that gender does not have a significant effect on OPTEMPO or Turnover Intentions.

Limitations

Existing research in the field of OPTEMPO has used many different definitions of the term. The differing definitions have been identified as one of the reasons for conflicting results on the effect of OPTEMPO on turnover. In order to provide a consistent definition for this study, the definition introduced by Huffman, et al. was used. Their definition focused on the rate of military operations as measured by deployments, training exercises, TDY assignments, and work hours.⁸⁴ The archival data set used for this study did not have an item that measured each of the measures in the OPTEMPO definition individually. The archival data only contained information on the number of days an individual had worked longer than a normal duty day (Item Number 28) and how many nights an individual had been away from their permanent duty station because of military duties (Item Number 29).⁸⁵ For the purpose of the study, the item used to measure nights away from the individual's permanent duty station was used to measure a combination of deployments, training exercises, and TDY assignments. In order to gain a better understanding of the separate influences on OPTEMPO, it would be important to have an individual measure for each of the areas mentioned. This is also a limitation of other studies which have found that certain aspects of OPTEMPO are more significantly related to turnover than others, for example Huffman, et al. found that TDY days and turnover had a significant link.

Contributions

The results presented in this article contribute to the research available on the impact of OPTEMPO on Turnover Intentions, and also contribute to the findings of Huffman, et al. Initial findings suggest that OPTEMPO has no effect on turnover when accounting for job satisfaction and organizational commitment. Individuals who have high job satisfaction and high OPTEMPO are not likely to demonstrate high Turnover Intentions. Similarly, individuals with high organizational commitment and high OPTEMPO are not likely to display high Turnover Intentions. It can be implied from these findings that organizations with high OPTEMPO should focus on increasing job satisfaction and organizational commitment in order to retain their employees.

It is also implied that people in the military self-select into the armed forces because they realize there will be high OPTEMPO and assume the risks associated with high OPTEMPO before entering the military. The findings of this article lay the foundation for steps the Air Force may take to overcome turnover during periods of high OPTEMPO. One suggestion includes acknowledging the increased OPTEMPO as a way of life in the Air Force and other branches of the military. Realistic job preview has undergone extensive academic evaluation to understand its effect on reducing turnover.⁸⁶ Extensive and realistic information about a new job to prospective and new employees may improve their likelihood of remaining with the organization.⁸⁷ Individuals may be searching for a career possessing a high OPTEMPO because they perceive it as a desirable or at least, an expected way of life.⁸⁸ When individuals searching for high OPTEMPO jobs enter the Air Force, they are more likely to be satisfied and committed because their job expectations are met. Future research could focus on the specific measures of OPTEMPO, job satisfaction, and organizational commitment in order to identify additional ways to influence turnover decisions.

Notes

1. R. W. Griffeth, and P. W. Hom, *Retaining Valued Employees*, Thousand Oaks, CA: Sage Publications, 2001.
2. D. T. Holt, M. T. Rehg, J. H. S. Lin, and J. Miller, "An Application of the Unfolding Model to Explain Turnover in a Sample of Military Officers," *Human Resource Management*, 46(1), 2007.
3. A. H. Huffman, A. B. Adler, C. A. Dolan, and C. A. Castro, "The Impact of Operations Tempo on Turnover Intentions of Army Personnel," *Military Psychology*, 17(3), 2005, 175-202.
4. Defense Manpower Data Center, *Status of Forces Survey of Active Duty Military*, DMDC Report No 2005-004, Arlington, VA, 2005.
5. A. H. Huffman, A. B. Adler, C. A. Dolan, and C. A. Castro, "The Impact of Operations Tempo on Turnover Intentions of Army Personnel," *Military Psychology*, 17(3), 2005, 175-202.
6. B. J. Reed and D. R. Segal, "The Impact of Multiple Deployments on Soldiers' Peacekeeping Attitudes, Morale, and Retention," *Armed Forces & Society*, 27(1), 2000, 57-78.
7. Huffman, et al., 2005.
8. R. A. Giacalone, "The Analysis of the Revised Army Career Transitions Survey (ACTS) and Comparison with the Fall 1996 Sample Survey of Military Personnel (SSMP): Results and Recommendations," Survey Report Number A102773, United States Army Research Institute for the Behavioral and Social Sciences, 2000.
9. D. J. Sullivan, "Job Satisfaction Among United States Navy and Marine Corps Aviation Officers – A Study of the Impact on Career Retention," ADA 359138, graduate thesis, Naval Post Graduate School, Monterey, CA, 1998.
10. C. A. Castro, A. H. Huffman, A. B. Adler, and R. Bienvenu, *USARUER Soldier Study USAMRU-R Technical Report Number TB 99-02*, Heidelberg, Germany: US Army Medical Research Unit-Europe, 1999.
11. Reed and Segal, 2000.
12. Defense Manpower Data Center, 2005.
13. Holt and Rehg, 2007.
14. Holt and Rehg, 2007.
15. J. Hosek, J. Kavanagh, and L. Miller, *How Deployments Affect Service Members*, Santa Monica, CA: Rand Corporation, 2006.
16. C. A. Castro and A. B. Adler, "Operations Tempo (OPTEMPO): Preface to the Special Issue," *Military Psychology*, 17(3), 2005, 131-136.
17. *Ibid.*
18. Huffman, et al., 2005.
19. Castro and Adler 2005.
20. Huffman, et al., 2005.
21. *Ibid.*
22. *Ibid.*
23. *Ibid.*
24. *Ibid.*
25. *Ibid.*
26. R. T. Monday, L. W. Porter, and R. M. Steers, *Employee-Organization Linkages: The Psychology of Commitment, Absenteeism, and Turnover*, New York, NY: Academic Press, 1982.
27. *Ibid.*
28. T. E. Becker and R. S. Billings, "Profiles of Commitment: An Empirical Test," *Journal of Organizational Behavior*, 14(2), 1993, 177.
29. A. Gade, R. B. Tiggler, and W. R. Schumm, "The Measurement and Consequences of Military Organizational Commitment in Soldiers and Spouses," *Military Psychology*, 15(3), 2003, 191-207.
30. Holt and Rehg, 2007.
31. N. J. Allen, "Organizational Commitment in the Military: A Discussion of Theory and Practice," *Military Psychology*, 15(3), 2003, 237-253.
32. P. W. Hom and C. L. Hulin, "A Competitive Test of the Prediction of Reenlistment by Several Models," *Journal of Applied Psychology*, 66(1), 1981, 23-39.
33. S. Kim, J. L. Price, C. W. Mueller, and T. W. Watson, "The Determinants of Career Intent Among Physicians at a US Air Force Hospital," *Human Relations*, 49(7), 1996, 947.
34. M. L. Teplitzky, "Junior Army Officer Retention Intentions: A Path Analytic Model," Technical Report No. 934, Alexandria, VA: U.S. Army Research Institute for the Behavioral and Social Sciences, 1991.
35. T. A. Wright and D. G. Bonett, "The Moderating Effects of Employee Tenure on the Relation Between Organizational Commitment and Job Performance: A Meta-Analysis," *Journal of Applied Psychology*, 87(6), 2002, 1183-1190.
36. *Ibid.*
37. R. P. Sanchez, R. M. Bray, A. A. Vincus, and C. M. Bann, "Predictors of Job Satisfaction Among Active Duty and Reserve/Guard Personnel in the US Military," *Military Psychology*, 16(1), 2004, 19-35.
38. Sanchez, et al, 2004.
39. I. Harpaz, *Job Satisfaction : Theoretical Perspectives and a Longitudinal Analysis*, 1st ed., Roslyn Heights, NY: Libra Publishers, 1983.
40. Sanchez, et al, 2004.
41. F. Alpass, N. Long, K. Chamberlain, and C. MacDonald, "Job Satisfaction Differences Between Military and Ex-Military Personnel: The Role of Demographic and Organizational Variables," *Military Psychology*, 9(3), 1997, 227.
42. Sanchez, et al, 2004.
43. *Ibid.*
44. Alpass, et al, 1997.
45. P. W. Hom and R. W. Griffeth, *Employee Turnover*, Cincinnati, Ohio: South-Western College Publishers, 1995.
46. J. L. Cotton and J. M. Tuttle, "Employee Turnover: A Meta-Analysis and Review with Implications for Research," *Academy of Management Review*, 11(1), 1986), 55.
47. *Ibid.*
48. L. K. Stroh, J. M. Brett, and A. H. Reilly, "Family Structure, Glass Ceiling, and Traditional Explanations for the Differential Rate of Turnover of Female and Male Managers," *Journal of Vocational Behavior*, 49, 1996, 99-118.
49. *Ibid.*
50. G. B. Lewis, "Men and Women Toward the Top: Backgrounds, Careers, and Potential of Federal Middle Managers," *Public Personnel Management*, 21(4), 1992, 473.
51. K. S. Lyness and M. K. Judiesch, "Are Women More Likely to be Hired or Promoted Into Management Positions?" *Journal of Vocational Behavior*, 54, 1999, 158-173.
52. Lyness and Judiesch, 1999.
53. M. L. Kelley, E. Hock, J. F. Bonney, M. S. Jarvis, K. M. Smith, and M. A. Gaffney, "Navy Mothers Experiencing and Not Experiencing Deployment: Reasons for Staying in or Leaving the Military," *Military Psychology*, Vol 13, No 1, 2001, 55-71.
54. Defense Manpower Data Center, 2005.
55. *Ibid.*
56. *Ibid.*
57. *Ibid.*
58. P. L. Alreck, and R. B. Settle, *The Survey Research Handbook*, 3d ed., Boston, MA: McGraw-Hill/Irwin, 2004.
59. Huffman, et al., 2005.
60. *Ibid.*

61. J. A. Jacobs, "Measuring Time at Work: Are Self-Reports Accurate?" *Monthly Labor Review*, 12 December 1998, 42-53.
62. Huffman, et al., 2005.
63. *Ibid.*
64. W. H. Mobley, *Employee Turnover: Causes, Consequences, and Controls*. Reading, MA: Addison-Wesley, 1982.
65. J. F. Price, and S. Kim, "The Relationship Between Demographic Variables and Intent to Stay in the Military: Medical Personnel in a US Air Force Hospital," *Armed Forces & Society*, 20(1), 1993, 125-144.
66. R. P. Steel, N. K. Ovalle II, "A Review and Meta-Analysis of Research on the Relationship Between Behavioral Intentions and Employee Turnover," *Journal of Applied Psychology*, 69(4), 1984, 673-686.
67. J. P. Wanous and M. J. Hudy, "Single-Item Reliability: A replication and Extension," *Organizational Research Methods*, 4(4), 2001, 361.
68. D. G. Gardner, L. L. Cummings, R. B. Dunham, and J.L. Pierce, "Single-Item versus Multiple-Item Measurement Scales: An Empirical Comparison," *Educational and Psychological Measurement*, 1998.
69. *Ibid.*
70. Wanous and Hudy, 2001.
71. Gardner, et al, 1998.
72. Sanchez, et al, 2004.
73. *Ibid.*
74. P. A. Gade, "Organizational Commitment in the Military: An Overview," *Military Psychology*, 15(3), 2003, 163-166.
75. Mowday et al, 1982.
76. Price and Kim, 1993.
77. *Ibid.*
78. Huffman, et al., 2005.
79. *Ibid.*
80. *Ibid.*
81. Castro, et al, 1999.
82. Reed and Segal, 2000.
83. Castro, et al, 1999.
84. Huffman, et al., 2005.
85. Defense Manpower Data Center, 2005.
86. Hom and Griffeth, 1995.
87. *Ibid.*
88. Reed and Segal, 2000.

Captain Nathan Olsen is currently the Chief, Maintenance Engineering, 375 CES/CEOS, Scott Air Force Base, Illinois. Captain Olsen is a civil engineering officer and is currently assigned as the Engineer, Zabul Provincial Reconstruction Team, Afghanistan. He holds a masters degree in engineering management from the Air Force Institute of Technology, Wright-Patterson AFB, Ohio.

Lieutenant Colonel Sharon Gibson Heilmann, PhD, is currently the Deputy for Research and Consulting and associate professor of management in the Department of Management, United States Air Force Academy, Colorado.



Your Publishing Connection

<http://www.afjma.hq.af.mil/lgj/afjhome.html>

AIR FORCE JOURNAL OF LOGISTICS

Quality You Can Count On