



Human Dimensions of Military Operations: The Construct of Personnel Tempo and its Relationship with Individual and Organizational Well-being

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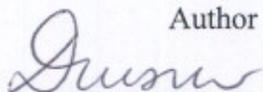
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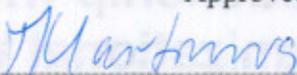
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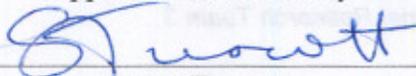
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Abstract

Dimensions of personnel tempo, such as heavy workload and frequent and lengthy deployments have been considered a critical area of concern for military planners and researchers. Nevertheless, no unifying model or framework has been proposed to understand how these dimensions interplay and relate to important individual and organizational outcomes, and to factors that could mitigate the impact of personnel tempo on these outcomes. A model of personnel tempo was developed in order to provide an effective way to describe how demands of military service can impact retention, performance and overall organizational effectiveness. This model will allow researchers to organize various components of the Human Dimensions of Deployment Study (HDDS) ¹ sponsored by Directorate of Quality of Life (DQOL) into a comprehensive framework. As such, it has considerable value as a tool to integrate research efforts and a starting point for the systematic exploration of the impact of perstempo on CF members and their families.

Résumé

Certains aspects du PERSTEMPO, comme une charge de travail lourde et des déploiements fréquents et longs, sont considérés comme des sujets de préoccupation majeurs par les planificateurs et les chercheurs militaires. Pourtant, on n'a proposé aucun modèle ou cadre général permettant de comprendre comment ces aspects interagissent et influencent des résultats importants sur le plan personnel et organisationnel et de déterminer les facteurs susceptibles d'atténuer les effets du PERSTEMPO sur ces résultats. On a élaboré un modèle de PERSTEMPO dans le but de se doter d'un moyen efficace de décrire de quelle façon les exigences du service militaire peuvent influencer le maintien de l'effectif, le rendement et l'efficacité globale de l'organisation. Ce modèle permettra aux chercheurs de structurer en un cadre général divers éléments de l'Étude sur les dimensions humaines des déploiements (EDHD)² parrainée par la Direction de la qualité de la vie (DQV). Le modèle en soi présente une valeur considérable comme outil d'intégration des efforts de recherche et constitue un point de départ pour

¹ Three survey instruments of the HDDS (CF members in Canada, CF members deployed and CF members returned from Roto 0) have been administered and results are currently being analyzed.

² On a administré trois questionnaires d'enquête dans le cadre de l'EDHD (aux militaires en poste au Canada, aux militaires des FC déployés et aux militaires de retour d'une ROTO 0). Les résultats sont présentement en cours d'analyse.

l'exploration systématique des effets du PERSTEMPO sur les militaires des FC et leur famille.

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1. Introduction

The Canadian Forces (CF) are becoming increasingly involved in a variety of multinational peacekeeping and humanitarian assistance missions. The ensuing increases in the tempo of domestic and international operations, combined with personnel shortfalls, have resulted in many members spending an increased amount of time away from home. As well, the workload of those who remain in garrison has increased substantially. The significant impact of the increased operational intensity on both serving members and their families has prompted the establishment of the “Perstempo and Human Dimensions of Deployment Study” under the umbrella of the CF Quality of Life (QOL) program (Dunn and Flemming, 2001).

Today's military missions are characterized by complexity, the three-block war (i.e., humanitarian, peacekeeping and combat operations), and the use of sophisticated technology. The pace of operations has resulted in an increased rate of deployment and family separation. These missions demand high quality, well-trained, and motivated members such as those currently serving in the Canadian Forces (CF). Therefore, the CF must not only continue to attract young people of this calibre to military service, but must also retain them. Offering challenging work, standard of living with fair compensation, healthy communities, and a reasonable work schedule can without a doubt, facilitate the retention of the present outstanding force. Investments in people are investments in the nation's security and its future. In exchange for the demands of the military lifestyle, the Canadian Forces must provide, , a good quality of life to its serving members.

The U.S. military finds itself in a similar situation. The frequency with which personnel are sent on long or hostile assignments and the duration, pace, and intensity of work while on those assignments have become matters of growing policy debate. Since the end of the Gulf War, the U.S. military has seen the pace of their activities quicken and the range of their responsibilities widen. The one-third cut in active-duty manpower at the end of the Cold War, from 2.1 million to 1.4 million serving members, has resulted in the current need for longer and repeated deployments, especially for the U.S. Army and the Marine Corps. These deployments have posed further challenges for active-duty service members and for their families. Moreover, the U.S. Armed Forces are presently expected to handle major theatre wars, small-scale contingencies and terrorist threats, as well as peacekeeping and humanitarian operations. These broad demands on serving members have triggered worries that personnel are used too intensively, which could be leading to high stress, decreased morale, reduced family stability, and, ultimately, lower retention.

Dimensions of personnel tempo, such as heavy workload and frequent and lengthy deployments have been considered a critical area of concern for military researchers. Nevertheless, no unifying theory or framework has been proposed to understand how these dimensions interplay and relate to important individual and organizational outcomes, and to factors that could mitigate the impact of personnel tempo on these outcomes. A theory, or a framework of personnel tempo can provide an effective way to describe how demands of military service can impact retention, performance and overall organizational effectiveness.

The purpose of this paper is to develop a conceptual model of personnel tempo or perstempo based on a review of the existing literature. The factors expected to play a critical role in the perstempo model are grouped under three categories of constructs: (1) predictors (i.e., various dimensions of personnel tempo); (2) intermediate factors (i.e., individual-level constructs such as functional coping strategies and hardiness, group level constructs such as leadership and group cohesion, organizational behaviours such as organizational policies and programs and family characteristics such as family support and family well-being); and (3) outcomes (i.e., retention, military performance, and individual well-being).

A review of the literature pointed to the interchangeable use of different terms (i.e. perstempo, optempo) and overall lack of consistency in the treatment of this construct. In order to address this issue, this paper starts with an attempt to clarify the definition of perstempo. This will be followed by a review of the studies of the effects of perstempo on individual (i.e. member well-being) and organizational outcomes (i.e. retention, military performance/readiness). Then, the paper presents the factors that have the potential to moderate the effects of perstempo on individual and organizational outcomes. Finally, a model of personnel tempo is proposed in order to provide an effective way to describe how the demands of military service can impact retention, performance and overall organizational effectiveness. This model will allow researchers to organize various components of the HDDS sponsored by the Directorate of Quality of Life (DQOL) into a comprehensive framework. As such, it will be a valuable tool to integrate research efforts and a starting point for the systematic empirical exploration of the impact of perstempo on CF members and their families.

2. Defining Perstempo

The terms “perstempo” and “optempo” are related, and often used interchangeably. Operational tempo, or "optempo," has been used by the Pentagon to portray the demands on its forces. “Optempo” encompasses an array of data - aircraft “flying hours,” ship “steaming days”, tons of cargo transported, number of rounds fired, fuel consumed per week, and the like, to gauge the intensity of operations. Obviously, the optempo increases with the intensity of and the number of operations. However, while optempo can inform policymakers on the pace of operations, it is less precise in revealing the degree to which serving personnel are being used in operations.

As a result, the Pentagon has introduced the construct of perstempo to measure how operations affect serving personnel. Perstempo in principle has many dimensions, such as hours of work per day, days per week, weeks per year, hours on alert, and work per hour. However, few actual measures have been available to measure perstempo. In an attempt to quantify perstempo, the Pentagon's 1997 Perstempo Working Group recommended the counting of the number of days away for deployment or for unit training. In essence, “perstempo” was defined as the time an individual spends away from his/her home station.

Two new terms, “worktempo” and “deptempo”, have recently been introduced by officials. Worktempo is generally defined as the pace of work that military personnel experience at their home stations. In general, when a unit deploys, those members who stay at home experience an increase in their worktempo. Likewise, units preparing for deployment experience an increase in their worktempo prior to departure. Deptempo stands for deployment tempo. It is generally a measure of the number of days in one month that a unit would have to deploy to accomplish the assigned training or operational missions.³ Specialized units in periods of high demand (e.g., specialized aircraft units), tend to have high deptempo.

The most recent publications attempting to describe the demand of military service, use the term optempo instead of perstempo, to describe the workload that service members need to sustain. Optempo was defined by Castro and Adler (2005) as “a multifaceted construct and, as such, it consist of several

³ Recognizing concerns about tempo and the need for improved measures to reflect it, in 1997 the U.S. Army began collecting data for a unit level measure called DEPTempo, defined in terms of the number of “unit” days away from home (Army Regulation AR-220-1, Unit Status Reporting, 1997). Those data are included in official readiness reports each month and are aimed at describing the aggregate impact of deployments on units.

operational definitions that reflect workload in garrison, training, and deployed environments” (p. 132).

Among the terms denoting military personnel, their workload and operational intensity, the term perstempo is the one frequently used in Canada. Perstempo is defined as the sum of the demands made by the military service upon CF members. These demands include but are not limited to duties associated with one's current position, directed deployments, domestic operations, training, professional development tasks such as courses and studying, garrison duties, and individual tasks. Perstempo is the cumulative total of the deployment load or the tempo of CF operations (optempo), the time a service member spends away from home for more than twenty-four hours, and his/her general workload (or garrison load) (Dunn, Ford & Flemming, 2005).

Regardless of the used terminology, it is necessary to recognize the importance of looking across all the three mission components: garrison workload, training exercises and the number and frequency of deployments. All components contain potential stressors, some of which are present across the components. For example, serving members returning from a deployment continue to experience high perstempo because of the operational demands at their home station, and particularly those demands that result from the absence of other units engaged in deployments.

Spouses and families are also affected by the tempo regardless of its type. For example, spouses report that it makes little difference if the service member is at home station but unable to spend time at home because of long hours at work or if he/she is away from home due to training or deployments. It should be noted that, most of the studies on perstempo examined the impact of selected mission components, e.g., number of deployments, workload in garrison or the length of time away, and not of all mission components together.

3. Studies of Perstempo

Although, as outlined above, perstempo comprises three components – deployments, training exercises and garrison duties, it is most typically associated with deployments. The majority of the perstempo studies focused on the relationship between deployment and retention, where deployment includes military operations, overseas tours, training and exercises.

3.1 Retention

Some studies reported that time away on deployments is associated with intention to leave the military (Sullivan, 1985), while other studies reported either an opposite relation or absence of association between deployment experiences and turnover intentions (Castro, Huffman, Adler, & Bienvenu, 1999; Reed & Segal, 2000).

Hosek and Totten (1998) conducted a study of perstempo among US military personnel, which was sponsored by the RAND's National Defense Research Institute. The study explored long or hostile deployments for service members in the early and mid-1990s. This study was the first examination of the relationship between reenlistment and personnel tempo across the different services of the US military. Perstempo was measured as the number of duty tours that station a service member away from home base for longer than 30 days or in a hostile environment for any duration. The research focused on enlisted personnel and constructed measures of long or hostile duty for individual enlistees. The measures were built from rosters of personnel who received the Family Separation Allowance for being separated from their families for 30 days or more or received Hostile Fire Pay for service in areas deemed hostile or involving a hazardous activity such as mine clearing. These measures allowed the analysts to track service member's long or hostile duty over a period of 24 months. With this approach, the analysts could determine the number of months and episodes of hostile and non-hostile duty.

This study found that shorter in duration deployments, such as three-month deployments, tend to increase reenlistment among first-term enlisted personnel in the US Army and Marine Corps. Deployments of limited duration also increased reenlistment among "early careerists", i.e., those who had been in the military for more than one term but for less than ten years. However, adding another tour of duty to the first one, such as, another three months away from home, reduced the likelihood of reenlistment, especially in the US Army and Marine Corps. The negative effect of the extra tour was the strongest when it involved hostilities.

Another study linking perstempo to increased intent to remain in the military (Sticha, Sadaca, DiFazio & Knerr, 1999), measured perstempo as the time away from the home station, the number of deployments in the previous year, and the length of deployments. The study found that the number of deployments prior to the end of a soldier's term of service⁴ was positively related to reenlistment likelihood, while the average length of deployments was negatively related. There is a considerable amount of evidence to indicate that deployments may play a role in military personnel's decisions to stay or leave the military (Hosek & Totten, 1998). The above-described studies show that the relationship between deployments and retention is a complex one. The type of deployment seems to influence the decision to stay or leave the military. Participating in non-hostile, newer missions is associated with higher rates of retention/reenlistment than participating in repetitive or hostile deployments. Moreover, career progression plans may mitigate the effect of time away on intention to stay (Morrow, 2004).

The inconsistencies in the definitions and measures that are used in the perstempo studies preclude a rigorous comparison of results across studies. This is the case not only for the studies that assess the impact of perstempo on retention, but also for the studies that examine the relationship of perstempo with other individual and organizational outcomes such as military performance, individual well-being and family well-being. The majority of these studies used only subcomponents of perstempo such as time away from home station for military duties (Giacalone, 2000) or considered only deployment counts and deployment length (Reed & Segal, 2000).

It is this confusion regarding definition that may provide an explanation of the contradictory findings in those studies. Further explanation for the difference in findings comes from the potential for intermediate factors, such as career intentions, to influence the relationship between perstempo and the individual and organizational outcomes. For example, time away, a component of perstempo, could for some members be potentially a developmental and career-enhancing experience, and thus have a positive impact on their retention, while for other members this may not be the case (Huffman, Adler, Dolan & Castro, 2005). Perstempo measures such as number of previous deployments and time away for training may generate obvious career-enhancing benefits and could therefore be expected to be associated with reduced turnover. This relation may change if the career-enhancing demands exceed the individual's endurance level when they become too intense in length (e.g., long deployments) or in experience (e.g., hostile deployments).

⁴ Term of service (TOS) is an agreement between the CF and individuals specifying the duration of service and providing the framework for managing personnel flow within military occupations in the CF. TOS are also the primary means of delivering the career security expected by Canadian Forces members.

In line with this argument, it is clear that measures of perstempo have to include all the three mission components: daily workload, deployment workload and training workload. Daily workload could be assessed by the number of hours worked per week. Deployment workload can be measured by the number of days deployed in a certain time frame or by the number of deployments in one's career. Training load can be assessed by the number of days spent on training exercises in a given time frame. In addition to these three components, when exploring the relationship of perstempo with career intentions, Huffman and colleagues (2005) included a fourth component, the subjective perception of role overload as a predictor of career intentions. The authors believed that the contrasting results linking deployment with decreased turnover could be rooted in the difference in measurement, particularly in terms of workload measures (i.e., time away, number of hours a week) and measures of one's subjective perception of his/her role overload. Indeed, they found that the perception of role overload was associated with turnover, whereas workload was not (Huffman et al., 2005).

As these findings indicate, the sheer quantity of perstempo is not sufficient to understand the impact of perstempo. Rather, it is necessary to understand the context of perstempo. Although members may report experiencing long hours and multiple deployments, it is their perception and expectations about these experiences that would most likely impact their well-being, performance and ultimately, career intentions. In addition to the impact of perstempo on member's career intentions, several studies have explored other individual and organizational outcomes of perstempo such as individual well-being, military performance, and family well-being (Castro & Adler, 1999).

3.2 Member Well-being

Research in both military and civilian work environments has shown that work overload is associated with many aspects of decreased well-being, such as increases in psychological strain (Bliese & Castro, 2000), health complaints (Repetti, 1993) and diminished emotional and physical health. The studies of perstempo in relation to serving members' well-being have ranged from exploring the effects of trauma experienced on deployments to exploring the effects of long work hours, frequent and lengthy separations from home and family.

During a contingency operation, a military member is confronted with various psychological stressors such as threat of death or injury to self or colleagues, fatigue, facing enemy fire, sustained operational tempo, pressure to perform, and also with physical stressors such as severe climate and harsh living conditions. Recent studies of the operational deployments to Afghanistan and Iraq have shed more light on some of the challenges and stressors that are faced by personnel on these types of operations. Helmus and Glenn (2005) noted

that, according to their interviews with infantry troops deployed to Iraq and Afghanistan, the urban-combat type of warfare exposes troops to additional types of extreme stressors such as close quarters, existence of unidentified and constantly changing enemy, high casualty tolls, and unforeseen obstacles.

Since 1990, dramatic changes have occurred in both the type and frequency of operational missions conducted by CF members. CF personnel have deployed overseas on increasing number of United Nations (UN) and North Atlantic Treaty Organization (NATO) missions, and most recently, in the high-intensity conflict areas of Afghanistan and Haiti. Such high-intensity missions are often associated with increased exposure to various deployment stressors. It has been found that soldiers exposed to casualties had greater distress scores (measured by the Impact of Event Scale and a tripartite measure of posttraumatic stress symptomatology) than soldiers who did not experience such exposure (Adler, Vaitkus and Martin, 1996).

Research on trauma in military populations has started to focus over the past ten years on the psychological aftermath of peacekeeping missions, for example Australians in Somalia (Ward, 1997); American peacekeeping missions to Somalia and Haiti (Fontana et al., 2000; Orsillo et al., 1998); Americans in the former Yugoslavia (Bartone et al., 1998; Ehlich et al., 1997); Canadians in Rwanda (Rosebush, 1998); and British peacekeepers in the former Yugoslavia (Deahl et al., 2000).

Ehlich and colleagues (1997) argued that these types of missions might be more stressful than traditional combat roles, since personnel may be exposed to a more diverse range of potentially traumatic stimuli, some of which can be very unexpected. The authors cited the case study of an American soldier who had experienced life-threatening situations on an operational deployment, but only developed severe trauma symptomatology after being exposed to a situation where he was unable to alleviate the suffering of starving children.

It is not only the exposure to traumatic deployment experiences that may impact the mental health of military members and their families. Previous research has shown that family separation is an important source of stress over and above other difficulties such as threat of danger (Bartone, 1998). Huffman, Adler and Castro (2000) examined the effects of deployment history on the psychological health of military personnel. In their study, personnel re-deploying from the NATO mission in the former Yugoslavia were assessed for symptoms of posttraumatic stress disorder (PTSD), depression, and alcohol problems. The length of the deployment was associated with increased reports of psychological distress. In addition, prior deployment experience was associated with lower rates of psychological distress for personnel deployed for six months or less. These findings indicate that both the length of the deployment and the number of deployments are important factors in predicting psychological health of military personnel.

A more recent study conducted by Adler, Huffman, Bliese and Castro (2005) confirmed that longer deployments and first-time deployments were associated with an increase in distress scores. However, a relationship between deployment length and increased distress was found only for male soldiers. The findings demonstrate the importance of considering the impact of exposure to long-term occupational stressors and confirm, in part, previous research that has demonstrated a different stress response pattern for men and women.

Several large-scale surveys of American troops have shown that separation from family during a deployment can be very stressful (Bartone, 1998; Bartone, Adler & Viatkus, 1998). It was found that daily stressors during deployment, including family separation, were related to self-reported symptoms of PTSD (Bartone, 1998). A study of CF personnel about to deploy on a peacekeeping mission corroborated research indicating that family concerns are related to increased psychological and physical symptoms (McCreary, Thompson & Pasto, 2003).

An increase in workload and deployment frequency in recent years seems to be associated with an increase in PTSD. Deployments force individuals to leave their families and friends for long, often uncertain, periods of time. This in turn affects military personnel who are deployed, families that are left behind, and colleagues who must deal with their emotions about not being deployed and with the additional work left by those who were.

In addition to separation stressors, other deployment stressors associated with peacekeeping operations can include uncertainty about individual responsibilities, lack of relevant training, uncertainty about dangers from attack, and even boredom. Surveys of personnel deployed on peacekeeping missions in the 1990s, conducted by Walter Reed Institute, show that some of the most significant stressors reported by personnel are being away from home, lack of personal privacy, lack of time off, disruption of educational goals, long work hours, physical conditions, lack of sleep, marital/relationship problems, and uncertain return or departure dates (Campbell et al., 1998).

A study of CF members engaged in peacekeeping tasks in Bosnia in the late 1990s, found that issues in the day-to-day work environment (e.g., leadership concerns, boredom at work, lack of cohesion among work colleagues, role uncertainty) were the largest factors associated with individual well-being (Dobрева-Martinova & Little, 1999). According to the researchers, these factors relating to the work environment during peacekeeping are not unlike everyday domestic military service. In fact, it has previously been reported that CF members perceive their service in Canada as less satisfying than their operational role (Murphy et al., 1997), indicating that day-to-day service may involve unique stressors that lead to dissatisfaction.

A study of occupational stress in the military has indicated that role stress was negatively associated with both personal and organizational well-being

(Dobрева-Martinova, Villeneuve, Strickland, & Matheson, 2002). As well, a high level of job unpredictability has been associated with lower well-being and higher intentions to leave the military (Tucker, Sinclair, & Thomas, 2005). It is critical, therefore, to assess work-related stressors in garrison in addition to the deployment related stressors, since everyday occupational stressors may be of even greater relevance for individual and organizational well-being.

In addition to its effect on individual well-being, personnel tempo may have an impact on the effectiveness of the organization as a whole. As indicated by Dobрева-Martinova and colleagues (2002, p. 112), “[I]t is generally assumed that behavioural outcomes valued by the employees (e.g., job satisfaction) will benefit the organization through increased effectiveness and cooperation, and that negative outcomes (e.g., strain) will result in increased withdrawal behaviours and in decreased organizational effectiveness.” An important outcome indicative of organizational effectiveness is military performance.

3.3 Military Performance/Readiness

In contrast to the many studies linking different perstempo components to health problems, there is less research linking perstempo to performance. Although military performance is acknowledged to have fundamental importance to the organization, few studies have examined the relationship of perstempo with military performance (Jex & Thomas, 2003). An extensive body of literature in civilian studies addresses the effects of stress on individual performance. In general, stress is considered to have a U-shaped relationship with performance, where it improves as the stressor stimulus reaches a moderate level and decreases as stimulus strength increases beyond this point (Selye, 1956). Previous research has found that the way in which work overload correlates with performance differs depending on how workload and performance are measured.

In a study of military personnel, role overload was inversely related to performance (Britt, Thomas & Dawson, 2005). In another study, Thomas, Adler and Castro (2005) surveyed 695 military personnel in all three perstempo components (garrison, training and deployment) and compared work overload reports with archived and self-report measures of performance. The authors found that workload correlated positively with performance, whereas role overload did not.

Just as it is important to consider multiple components of perstempo, performance must also be considered as a multidimensional construct. An often-cited model of performance (Campbell, 1999) includes multiple performance dimensions that range from core technical proficiency, demonstration of effort, and personal discipline, to job-specific task proficiency.

It should be noted that individual performance in the military is often referred to as readiness. Similar to Campbell's 1999 model of job performance, Harris, Blair and O'Neill (1995) defined individual readiness as "the extent to which an individual is prepared, able, and motivated to perform his or her job as part of the larger military mission" (p. iii). Both models present performance/readiness as a multidimensional construct consisting of task performance (i.e., Technical Competence in the 1995 Harris et. al's model and Job-Specific Task Proficiency in the Campbell model) and contextual performance (i.e., Discipline and Effort/Motivation in both models) dimensions.

For the purpose of researching the relationship between morale, welfare, recreational programs and military readiness, McGonigle and colleagues (2005) defined readiness as a multidimensional construct that includes: unit cohesion, fitness (both physical and mental), technical competence (includes both job-specific and non-job-specific task proficiency), organizational citizenship behaviour (OCB), preparedness (the extent to which soldiers report that they are prepared to deploy) and commitment.

As with studies examining the impact of perstempo on retention, some inconsistent findings exist from research examining the relationship between perstempo and readiness/performance. The PERSTEMPO Impact Study (Ramsberger & Wetzel, 1998) found a relatively positive effect of perstempo on readiness. Special Operations Forces soldiers were more than twice as likely to agree with positive than negative statements pertaining to the impact of perstempo on readiness and training (Ramsberger & Wetzel, 1998). Another study (Adlerks, 1998) indicated that the amount of time soldiers spent away from their duty station was not related to self-assessments of individual or unit readiness.

Some research assessing the effects of perstempo on readiness suggests that the type of activity, during both deployments and time at home station, affected perceptions of readiness and the relation between perstempo and readiness (Sticha et al., 1999). For example, a study of Air Force members (Fossen et al., 1997) found that 70% of the members indicated that excessive time on wing exercises and inspections was seriously degrading readiness, even though these activities typically did not involve much time away from home. Furthermore, off-station training received positive rating regarding its effects on readiness, even though it took personnel away from their home station (Fossen et al., 1997).

In summary, although the research is quite limited, indications from the field suggest that readiness may be affected by certain dimensions of perstempo. In order to fully assess the relationship between perstempo and readiness/performance, it is important to identify the conditions under which different dimensions of perstempo are associated with decreased performance.

Furthermore, multiple measures of job performance, such as unit cohesion, fitness, technical competence, OCB, preparedness and commitments should be examined.

Given that it is often impossible or unrealistic to control perstempo requirements, the focus should be on identifying effective strategies and resources that could moderate the negative impact that high perstempo might have on serving members and the organization. Building upon the findings related to the effects of stress on negative outcomes in the stress – strain models used by occupational researchers (e.g., Koeske & Koeske, 1993), and the Human Dimension of Operation model offered by Murphy and colleagues (Murphy, Farley & Dobрева-Martinova, 1997) that explore the potential of intermediate variables to moderate the negative impact of stress, effective strategies could be identified that can moderate the perstempo – outcome relationship through intermediate processes.

4. Intermediate Variables

Within the perstempo framework, intermediate or intervening variables are factors that have the potential to moderate the effects of perstempo on individual and organizational outcomes.⁵ To describe all potential moderators of perstempo is beyond the scope of this paper. Instead, a multiple-level approach adapted from Castro and Adler (2005), which identifies the factors that may moderate the perstempo – outcome relationship, is presented. This approach recognizes areas in which responsibilities can be focused to deal with the effects of perstempo at the individual, leader/group, organizational, and family levels. Each level can make a unique contribution that can minimize the harmful effects of perstempo and guide the development of effective intervention strategies.

4.1 Individual Factors

In the stress literature, many stress moderators are perceived as resources, and those individuals that have the greatest resource pool are perceived to be the most resilient when under stress (Murphy et al., 1997). A notable resource at the individual level that has the potential to moderate the negative impact of stress is coping. Coping strategies are used to avoid being harmed by stressors, and may include such actions as eliminating the source of the stressor, altering one's appraisal of the stressor, or attempting to manage or reduce feelings of discomfort (Murphy, 1985).

Coping refers to the thoughts and behaviours utilized in situations that are perceived as both personally significant and challenging the individual's resources for dealing with the situation (Folkman & Moskowitz, 2004). Coping may affect one's immediate emotional and behavioural reactions to a stressful experience, as well as his/her longer-term adaptive outcomes (e.g., well-being, social functioning) (Lazarus, 1995). Coping has commonly been categorized as either problem-focused (i.e., aimed at problem solving or addressing the source of the stressor) or emotion-focused (i.e., concerned with attenuating the negative emotions induced by the stressor) (Folkman, & Lazarus, 1980). In a similar way, several researchers (e.g., Billings, & Moos, 1981; Suls & Fletcher, 1985) have conceptualized coping along two dimensions: active and passive.

While other approaches emphasize the function of coping (i.e., managing the problem versus managing the emotions associated with the problem), the active

⁵ A moderator relationship describes a situation where the relationship between the independent and the dependent variable changes (direction and/or strength) as a function of the level of a third variable (Howell, 2002).

versus passive approach concerns the focus of coping (i.e., the type of action – approach or avoidance – used to deal with the stressor) (Blalock & Joiner 2000). Active strategies involve directly addressing the source of the stressor, and include such actions as changing what is causing the stress, trying to feel challenged by it, and looking for information about possible choices of how to deal with it. Passive strategies, in contrast, involve attempts to behaviourally and/or emotionally avoid the stressor, including becoming apathetic, physically withdrawing from the situation, alcohol/drug use, and trying to ignore the stressor.

Problem-focused, or active coping has generally been associated with more positive outcomes, such as increased physical and mental health, whereas emotion-focused or avoidant strategies (e.g., rumination, emotional containment, self- and other-blame) are generally considered more maladaptive, leading to psychological distress (Matheson & Anisman, 2003). In line with this research, military research on coping has indicated that individuals who denied or disengaged from stressful experiences, or who tended to vent emotions, were more likely to report negative psychological, behavioural, and physical symptoms. For example, the use of avoidance coping was related to the degree of strain reported by CF members (Dobrevá-Martínova et al., 2002). Furthermore, such maladaptive coping strategies exacerbated the effects of work-related stressors (acute work stressors, lack of job stimulation, role ambiguity) on reported negative health outcomes (Day & Livingstone, 2001).

With regard to perstempo, coping strategies could be an individual level resource that might intervene in the perstempo-outcome response relationship and a resource that could help alleviate the effect of perstempo on one's well-being. Some other individual characteristics that have been studied as intermediate factors include self-efficacy beliefs (Jex & Bliese, 1999), individual perceptual outlook (Lazarus & Folkman, 1984), and uncertainty or lack of control (Leitch, 2003).

4.2 Leadership and Group Factors

In addition to the individual characteristics, characteristics of the group and its leadership can significantly reduce the negative effect of perstempo on important individual and organizational outcomes. In a survey of 1,001 male Non-Commissioned Officers and enlisted soldiers deployed to Bosnia, Arincorayan (2000) examined the soldiers' stress levels in relation to their perception of leadership, group cohesion and coping. The results of this study indicated that soldiers who experienced low levels of stress tended to perceive their leadership environment as positive and their peer-relationships as cohesive.

In another study, Kirmeyer and Dougherty (1988) found that leader characteristics, including effective communication and motivational skills, could limit the influence of stress on team performance and contribute to unit morale and efficiency. Furthermore, Helmus and Glenn (2005) suggested that leadership quality and involvement of the leader with his/her unit (being present and visible, hanging out with subordinates, concerned with the well-being of subordinates) are together able to significantly reduce stress-related negative performance outcomes.

Another important moderator of stress at the group level is unit cohesion. Cohesion has been defined in a military context as “the bonding together of members of a unit or organization in such a way as to sustain their will and commitment to each other, their unit, and their mission” (Johns et al., 1984, p. ix). Several factors contribute to strong group cohesion. For example, spatial and temporal proximity and group membership can lead individuals to feel closer to others in the group than to those outside of it (Gaertner et al., 1993). Strong leadership (Henderson, 1990), small group size (Hogg, 1992), experience of success (Lott and Lott, 1965), and shared threat (Johnson, Johnson, and Maruyama, 1984) may also contribute to strong group cohesion. On the other hand, group turnover and turbulence may weaken cohesion (Henderson, 1985).

There is a significant overlap between the concepts of cohesion and social support (Griffith & Vaitkus, 2000). Previous research has examined social support as a moderating factor in the relationship between stress and performance (Cohen & Wills, 1985). Cohesion could be seen as a form of informal social support that is more often used in stressful situations than formal sources of support (e.g., a chaplain or social worker). Focus groups conducted by Hosek and colleagues (2006) with military members revealed that in participants’ opinion, talking with friends and colleagues in their units was more useful in coping with stressors or dealing with trauma than a chaplain or a mental health professional. The lack of shared experiences with formal support sources, as well as the perception of stigma associated with using support services, were cited as reasons for which members relied on other individuals in their unit when coping with stressors or trauma. Thus, cohesiveness in the military unit appears to be a key factor associated with the well-being of personnel, as well as the organization as a whole.

In the presence of stressors related to perstempo, several studies have found that higher levels of unit cohesion are associated with more effective coping and better performance (e.g. Rostker et al., 1993). Importantly, cohesion is considered to be a key factor for combat effectiveness and performance, as well as combat motivation and individual morale (Henderson, (1985). Units with high cohesion, good leadership, and high morale are less likely to lose personnel for reasons relating to perstempo stressors (Helmus & Glenn, 2005).

4.3 Organizational and Situational Factors

There are many stressors associated with military life, including those related directly to the military culture and organization. Organizational factors such as established policies, programs and guidelines could moderate, at the organizational level, the impact of perstempo. Unlike moderators at the individual and group/leader levels, moderators at the organizational level reflect the larger culture, vision, and policies of an organization and provide the work context for leaders and members (Castro & Adler, 2005).

Edwards and Van Harisson (1993) argued that work strain and individual stress can be caused by a poor fit or mismatch between the individual and the organization or environment. This suggests that individuals who fit less well into the military culture may experience more job strain and resulting stress, and possibly even weakened job performance, than individuals who are better suited for military life.

Another moderator at the organizational level is perceived organizational support. Perceived organizational support is a global belief about the organization's commitment to its members (Eisenberger et al., 1990). Levinson (1965) noted that organizational policies and decisions carried out by agents of the organization are often viewed as indicators of the organization's intent. Policies and programs that help employees balance the competing demands of work and family can enhance employees' perceptions that the organization cares about them (Lambert, 2000). These policies and programs often reflect several quality of life domains that include family relationship, income and standard of living.

Quality of life factors under organizational control that are frequently cited as important moderators of the effects of deployments are communication and predictability. "Ability to communicate with family" and "knowing the expected length of deployment", were rated as important or very important by 92% and 90%, respectively, of service members with deployment experience or for whom a deployment was pending (Defense Manpower Data Centre, 2003). Related to the issue of predictability, 85% of service members reported that pre-deployment information was important or very important in coping with deployment (Defense Manpower Data Centre, 2003).

Members certainly prefer to know the amount of their deployment time. It was found that higher-than-usual work stress is more likely to occur when a service member's time away from home is more or much more than expected (Hosek, Kavanagh & Miller, 2006). Knowing helps members and their families make plans, and uncertainty or last minute changes can be frustrating.

Research on the effects of deployment on military families has also focused on a significant moderator of family stress that has grown dramatically in the past two decades: the amount and type of communication between family members

during deployments. Recent studies have suggested that the ability to communicate with home is important for deployed service members and can help to offset the negative stresses and the challenges of family separation and deployment (Campbell et al., 1998; Halverson, Bliese, Moore, and Castro, 1995).

Another quality of life factor under organizational control that plays a role in perstempo is financial repercussions of deployments (Sticha et al., 1999). It has been found that deployment pay and other types of special or incentive pays can increase the expected utility of deployments. The literature suggests that effectively compensating individuals for deployment can offset the negative effects of deployment on reenlistment (Lakhani and Abod, 1997).

In addition to organizational factors, situational variables may also play a role in moderating the effects of perstempo on important individual and organizational outcomes. An example of a situational factor that plays a role in perstempo, particularly in moderating the effects of operational deployment, is mission characteristics. Participating in non-hostile, newer missions has been found to be associated with higher rates of retention/reenlistment than participating in repetitive or hostile deployments (Hosek & Totten, 1998). Another example of a possible moderator of the perstempo effects is related to governmental and overall societal attitudes and views on specific operational deployments. Although no published study was found in this area, it is reasonable to expect that being on a deployment that is supported and perceived worthwhile by the majority of Canadians would have a positive influence on morale.

4.4 Family Characteristics

Military families face a number of unique stressors as they attempt to meet the demands placed upon them by the military institution. In the late 1980's, Segal characterized the military as a "greedy" institution because of its tremendous demands for the loyalty and commitment of service members and their families (Segal, 1986). Family members are expected to adapt to these demands and place their unconditional support behind the service member in his/her efforts to successfully accomplish the military mission. Segal argued that changes in family patterns are making military families greedy as well. Families are now making increasing demands for service members' time and commitment that can conflict with the demands of the military. Military service members and their families are under intense pressure to adapt to these conflicting demands (Orthner & Bowen, 1990).

The military lifestyle which influences family well-being includes all dimensions of perstempo: time away from home, unaccompanied tours to foreign countries, deployments to hostile situations, and long and often unpredictable work hours. Family adjustment to the rigors of military life is

important because it influences not only military member's and family members' well-being, but also factors with a demonstrated influence on member retention such as spouse's satisfaction with the military and spouse's support of the member's career. As a result of the family's possible impact on retention, the military became increasingly interested in how families adapted to the specific demands of military life and the phrase "family adaptation" replaced "family wellness" (Harris et al., 1995).

Family adaptation is a relatively new concept with various definitions and operationalizations. Orthner, Bowen, and colleagues used the "adaptation" concept to refer to: a) the fit between families and their environment (Orthner & Bowen, 1990); b) family adjustment to organizational demands (Orthner, Zimmerman, Bowen, Gaddy, & Bell, 1991); and c) family members' overall adjustment to marital, family and military life (Bowen, 1991). This conceptualization communicates the understanding that adaptation refers to the extent to which family members are able to meet their personal and family needs/demands and those of the environment, in this case, the military.

There are numerous approaches to identifying indicators of family well-being and adaptation. Much of the military family literature examines well-being as measured by family members' satisfaction with the military way of life and/or satisfaction with family life. Major contribution to the understanding of family adaptation comes from the research by Orthner and colleagues (1991) who operationalized family adaptation as a complex construct. The authors conceptualized family adaptation as a latent variable specified by three measures (i.e., Army-family fit, spouse support for the Army, and family adjustment to the Army) and influenced by family conditions (e.g., family demands, family disagreements, children in household, and financial problems), and family strengths (e.g., ability to cope with family demands, marital separation risk, marital satisfaction, family coherence, and spouse communications).

Family well-being and family adaptation are also affected by operational deployments. The effects of deployments on a member's family have been a major consideration in evaluating the effects of increased perstempo. In their analysis of the Army Special Operations Forces' data, Sticha and colleagues (1999) indicated that members who had more time away from home reported greater difficulty on the part of their family in coping with their deployment schedule. Furthermore, the respondents with greater time away from home reported that it was more difficult to maintain a balance between their work and family life and that their family showed less support for their career in the military (Sticha et al., 1999).

Another family characteristic that may moderate the effects of perstempo dimensions is spousal support of the member's career and spousal attitudes

toward military life. An extensive body of research, conducted mostly with military wives, showed that the spouse's attitudes toward military life and the military career of their service member spouse were strongly linked to and predictive of the service member's reenlistment (Bourg and Segal, 1999; Lakhani, 1995;). Furthermore, there is empirical evidence indicating that a spouse's perceptions of the degree to which the military is supportive of military families affects the spouse's satisfaction with military life, her (these studies looked at military wives only) support for her husband's military career, and her willingness to tolerate deployment separations (Segal and Harris, 1993). Bourg and Segal (1999) found that perceived unit support for family issues has a direct effect on the spouse's commitment to the military and the soldier's commitment to the military in the case of the Army.

It is important to note that researchers frequently consider family characteristics, such as family well-being to be an outcome, rather than a moderator (Castro & Adler, 2005). However, from an organizational point of view, family characteristics could be both an outcome and a moderator. For example, family well-being could be studied as an end point in itself with the aim of looking into mechanisms and processes to improve it, because it is the 'right thing to do'. However, when the reason to improve family well-being is not just because it is the 'right thing to do', but also because of the strong associations of family well-being with member's well-being as well as important organizational outcomes such as retention and performance, then it is clear that we are looking at family characteristics as a moderator.

5. Proposed Model of Perstempo

As demonstrated above, research and analyses attempting to describe the effects of perstempo on important individual and organizational outcomes have been hampered by the difference in conceptualizations of perstempo, the complexity of the relationship between perstempo and outcomes, as well as the interaction of perstempo with other factors. Perstempo is a multifaceted construct and as such, it consists of several operational definitions that reflect objective assessments of workload such as workload in garrison, training and deployed environments, as well as subjective perception of workload, i.e., role overload. This broad conceptualization of perstempo allows for a thorough and systematic study of key perstempo indicators. The three objective dimensions of perstempo (garrison, training and deployments) focus on quantity aspects of perstempo such as length of deployments, hours in garrison, time away on exercise. All these aspects contain potential stressors, some of which are found in all three dimensions of perstempo. Role overload, on the other hand, denotes a subjective experience of perstempo. This dimension is important to be included in assessing perstempo, since it has been found that even though members may report concerns with long hours and multiple deployments, it is the perceptions and expectations about the experience of long hours and multiple deployments that had a stronger impact on the studied outcomes, than the extent and frequency of the specific demands (Teplitzky, 1991).

The majority of outcomes examined in the perstempo studies could be classified in three major areas: (1) military performance/readiness, (2) individual well-being, and (3) retention. These areas include important outcomes at both the individual and organizational levels. Some relationships between perstempo and these outcomes could be direct, while others might show a more indirect path. Also, it would not be surprising if some of these outcomes were correlated among themselves. For example, some of the important factors related to military performance and retention bear not only on the performance of the military member in the field, but also on his/her well-being.

As indicated above, many militaries are facing the challenge of dealing with increased operational tempo, reduced resources, evolving missions and changing roles. The escalating level of military demands on today's recruits is sometimes beyond the military control. However, it is important to identify effective strategies for reducing the negative impact that high perstempo might have on members and their families.

An attempt to integrate perstempo into a model with associated outcomes based on findings reported in the literature, and with intervening factors that could mitigate the impact of perstempo on the outcomes, is presented in Figure 1.

The list of intervening factors is classified into four levels. The first level includes behaviours and characteristics of an individual member, such as coping strategies, self-efficacy beliefs, individual perceptual outlook and uncertainty or lack of control, to name a few. Certain demographic characteristics such as gender, age, rank, years of service would also fit into this category of the individual moderators. The second level includes leader behaviours and group characteristics. Both leadership quality and group cohesion were identified as important moderators of the stress-performance relationship (Milgram et al, 1989). Military leaders are responsible for mission readiness and their behaviours are strongly associated with individual well-being and performance. The degree to which leaders affect the coping of individuals with work stressors is an important topic because it provides a platform for capitalizing on behaviors that leaders apply or are capable of learning (Castro and Adler, 2005).

The third level of intervening variables, the organizational behavior level, includes establishing policies, practices and developing guidelines. The organizational characteristics identified in this paper to be a factor in the perstempo – outcome relationship include quality of life programs/policies, such as communication with family while on deployment, predictability of deployment and pay incentives. Some of the organizational behaviours are applicable across all perstempo environments (garrison, training, deployment), whereas others are environment specific. For example, sexual harassment policy is applicable in all situations, while the policy on alcohol use is not (Castro & Adler, 2005).

To provide insight into the relationship between perstempo and various organizational and individual outcomes, it is important to examine the intervening factors from all three levels. This proposed perstempo model has adopted and revised Castro & Adler's "OPTEMPO model". The proposed perstempo model can provide an effective way to describe how deployment, time away for exercise, long hours in garrison and overall role overload can alter career intentions, military performance and individual and family well-being. The model attempts to combine perstempo dimensions into a logical framework for how to maximize the individual and organizational outcomes (e.g., reenlistment). The model may also account for the variation of and across different kinds of separation or deployment experiences. This model could enable policymakers to test or simulate the effects of policy changes by varying its elements.

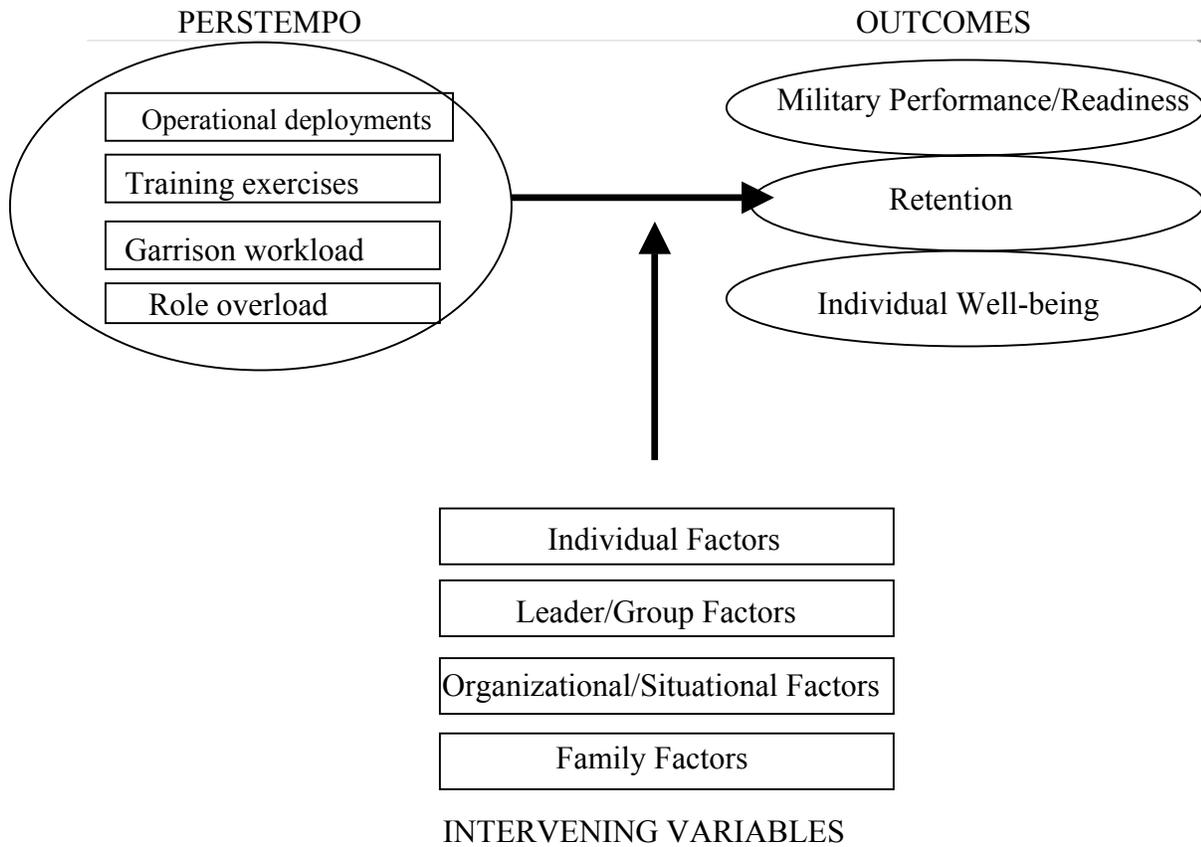


Figure 1. Suggested Model of Perstempo

6. Current Implications and Future Directions

In order to learn more about the impacts of perstempo, and thereby create effective strategic policy, the Directorate of Quality of Life (DQOL) has sponsored the Human Dimensions of Deployment Study (HDDS). This study is aimed at measuring the impact of perstempo on CF members, their families, and the organization, in terms of individual and family well-being, retention and military performance. Three survey instruments of the HDDS (CF members in Canada, CF members deployed and CF members returned from Roto 0) have been administered and results are currently being analyzed.

The initial HDDS analyses confirmed that time away from home has effects on the well-being of CF members (Flemming, 2005). Furthermore, these analyses indicated that time away related problems are more often the result of the cumulative and combined impact of all sources of time away including courses, training, attached postings and temporary duty (TD), as well as deployments. These findings highlighted the urgency with which the CF needs to collect data and report on the deployment and employment of its personnel. As a result of these findings, DQOL has developed a system to track and report on the time that CF members spend away from home overnight. Having this capability in the future, once the database is populated, will help the chain of command in several ways: in managing time away for unit personnel; in identifying by rank and position distressed trades that are constantly being over-tasked; and in identifying members with little time away to assist in better sharing the deployment load (DQOL, 2005).

With respect to future analyses of the HDDS data, the model proposed in this paper will allow researchers to organize various components of the HDDS research into a comprehensive framework. As such, the model has considerable value as a tool to integrate research efforts and as a starting point, for the systematic exploration of the impact of perstempo on CF members and their families. Furthermore, using a systematic approach, adopted from U.S. military research, will enable the understanding of CF findings in relation to findings on perstempo in other militaries. Subsequent perstempo analyses will focus on identifying conditions under which perstempo dimensions are associated with more positive outcomes. By identifying the costs and benefits of operating in a high perstempo environment, the specific areas for intervention to enhance members and family well-being could be targeted.

Understanding the relationship between perstempo and important individual and organizational outcomes has both practical and theoretical relevance. At the strategic and tactical levels, we should be able to identify predictors of military performance and readiness. Such readiness encompasses several outcomes including retention, family and individual well-being. Understanding

the relationship between perstempo and these outcomes have the potential to guide policy planners and commanders in anticipating shortfalls in readiness, understanding the boundaries of unit effectiveness and targeting prevention and intervention strategies. In terms of further research, useful hypotheses would be developed to explore perstempo in empirical studies and to develop evaluation studies of policy change or intervention.

Following the recommendations of the perstempo studies, future research would benefit from the use of longitudinal designs, perhaps by studying both the members and their spouses/partners before, during and after deployments. It is imperative that the measurement of the incidence and impacts of perstempo be rigorously conducted among military personnel, their families and their organizations. It is critical that perstempo be understood in a larger context. All dimensions of personnel tempo – military deployments, training exercises and garrison duties are useful in maintaining member and unit readiness, and therefore, they should all be accounted for when dealing with perstempo. Future research should focus on all three components of personnel tempo as well as the subjective perception of workload, the specifics of the personnel tempo-outcome relationship and the length of time it takes members to recover from periods of heavy workload. Ultimately, answers in these areas of investigation will enable the optimization of the readiness of military members, the effectiveness of their units, and the well-being of their families.

With high intensity deployments like the one in Afghanistan, issues of perstempo will become increasingly important. The effects of perstempo on families, friends, loved ones and the military members themselves will become increasingly evident. Learning from past studies and experiences and providing needed and necessary support for family members and returning military members is crucial.

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Dimensions of personnel tempo, such as heavy workload and frequent and lengthy deployments have been considered a critical area of concern for military planners and researchers. Nevertheless, no unifying model or framework has been proposed to understand how these dimensions interplay and relate to important individual and organizational outcomes, and to factors that could mitigate the impact of personnel tempo on these outcomes. A model of personnel tempo was developed in order to provide an effective way to describe how demands of military service can impact retention, performance and overall organizational effectiveness. This model will allow researchers to organize various components of the Human Dimensions of Deployment Study (HDDS) sponsored by Directorate of Quality of Life (DQOL) into a comprehensive framework. As such, it has considerable value as a tool to integrate research efforts and a starting point for the systematic exploration of the impact of perstempo on CF members and their families.

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- Time Away
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- Military Performance / Readiness
- Individual Well-being
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